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THE

PRINCIPLES AND PRACTICE

OF

MEDICAL JURISPRUDENCE

BY

ALFRED SWAINE TAYLOR, M.D., F.R.S.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS
LECTURER ON MEDICAL JURISPRUDENCE IN GUY'S HOSPITAL

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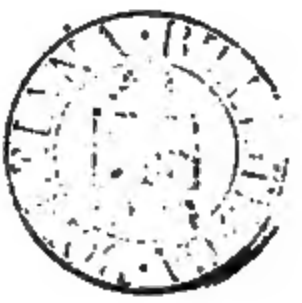

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CORRIGENDA.

Vol. II. at page 137, top line, for '1838' read '1868.'
" " 155, 23rd line from top, for '1871' read '1872.'
" " 187, top line, for 'medicinal' read 'medical.'
" " 224, 12th line from top, for 'estates' read 'estate.'
" " 492, 5th line from foot, for 'divest' read 'assure.'
" " 602, 15th line from foot, for '*artis*' read '*ars*.'

THE

PRINCIPLES AND PRACTICE

OF

MEDICAL JURISPRUDENCE.

ASPHYXIA.

DROWNING.

CHAPTER 52.

ASPHYXIA OR APNŒA—DROWNING—CAUSE OF DEATH—FATAL SECONDARY CAUSES—PERIOD AT WHICH DEATH TAKES PLACE—RESUSCITATION—TREATMENT—POST-MORTEM APPEARANCES—EXTERNAL AND INTERNAL—WAS DEATH CAUSED BY DROWNING?—SUBSTANCES GRASPED IN THE HANDS—WATER IN THE STOMACH—WATER AND MUCOUS FROTH IN THE LUNGS.

UNDER the term *Asphyxia*, or *Apnœa*, are included those forms of violent death in which the act of respiration is primarily arrested (vol.1, p.163). These comprise death from drowning, hanging, strangulation, and suffocation; and in this section the fatal effects of lightning, cold, and starvation will also be considered.

According to the Reports of the Registrar-General, the violent deaths registered in London for the three years 1846, 1847, and 1848 were 1,091—namely, from poisoning, 162; wounds, 250; and asphyxia (including only drowning, hanging, and strangulation), 679. It is doubtful whether these returns furnish an accurate comparative record; but in all cases it is probable that the deaths from asphyxia are the most numerous; and of all the forms of asphyxia, drowning appears to be the most frequent cause of death. Thus, out of the 679 deaths from asphyxia in the three years above-mentioned, 405 were from drowning alone. Other returns of the Registrar-General show that in the year 1858, the deaths by drowning in London were 271; and in 1867, 379; in the ten years 1858–67, 3,367 deaths were registered in London from this cause; namely, 2,965 by accidents, and 402 by suicide. In England and Wales the annual average number of deaths by drowning in seven years (1858–64), were 2,629; 2,414 by accidents, and 215 by suicide. In Paris drowning appears to be also a frequent cause of violent death. Out of 1,766 cases received at the Morgue in ten years, 1,414 are reported to have been cases of drowning. Among the other violent deaths, there were 114 by hanging, 56 by suffocation with charcoal, and only 11 by poison. It is to be presumed, that both in London and in Paris the fact of finding a body in water is con-

sidered, in many cases, to be sufficient evidence of death from drowning, although it is notorious that after the perpetration of murder, bodies are frequently thrown into water for the concealment of the crime.

THE CAUSE OF DEATH.

Asphyxia, or *Apnœa*.—Many opinions have been entertained respecting the manner in which death takes place by drowning. It was at one time supposed that the water which passed into the stomach of a drowning animal had an injurious effect, and operated as the immediate cause of death. This opinion prevailed before the chemical changes connected with respiration were fully understood. It would, however, have been easy to show the insufficiency of this explanation by a simple appeal to facts. Water is not invariably found in the stomachs of the drowned; and, again, it may be introduced into the stomach in much larger quantity than we are accustomed to meet with it in the body of a drowned person, without producing any deleterious effect. The passage of water into the small air-tubes and cells of the lungs has been suggested as a cause of death; and recent researches have rendered it probable that water under these circumstances accelerates death. Another theory at one time prevalent was, that in the act of drowning there was a collapse of the lungs by the expiration of air. Recent observations have, however, shown that the lungs are more commonly distended, and that they fill the cavity of the chest. Although some air is lost, the penetration of their substance by water causes them to acquire increased bulk.

No doubt now exists among physiologists that death by drowning is primarily due to apnœa (from *α* priv. and *πνέω*, I respire), or suffocation; in which condition breathing is impeded, and the blood is circulated in a state unfitted to support animal life, its circulation through the minute vessels of the lungs being sooner or later wholly arrested. Under these circumstances the person lies in a state of *asphyxia* (from *α* priv. and *σφύζις*, pulse), *i.e.* he is pulseless or lifeless. Some physiologists employ the terms apnœa and asphyxia as synonymous—*i.e.* to signify the state of lifelessness induced by the stoppage of respiration—while others consider apnœa to be the first stage of asphyxia. To the gradual arrest of the pulmonary circulation, as a consequence of the suspension of breathing, must be ascribed the gorged or congested condition of the right cavities of the heart as well as of the lungs of the drowned, an appearance frequently met with in death from asphyxia. The observations of Sir B. Brodie ('Lectures on Pathology,' p. 66) and others clearly prove that the circulation may be carried on for two or three minutes, or even longer, after respiration has ceased, so that there is not a sudden cessation of the heart's action. Asphyxia is induced in drowning owing to a physical impediment to the introduction of air into the lungs. The medium in which the person is immersed acts mechanically, and even more effectually than a rope or ligature round the neck; for although air escapes from the lungs, and water penetrates into the minute air-tubes, yet no air can enter to supply the place of that which has already expended its oxygen on the blood. Hence this fluid must circulate, in the first few minutes after submersion, in a state unfitted for the support of life (unaërated); but the person lives, and is susceptible of recovery within a short interval. After the entire suspension of respiration, the action of the heart gradually slackens and finally stops. It is at this period of the complete arrest of circulation that asphyxia passes into death. Asphyxia is determined by the period at which respiration is completely arrested; but the point of time at which death from drowning occurs is fixed by the moment at which the action of the heart ceases. This varies considerably, according to age, sex, state of health, and other circumstances. (See vol. 1, p. 163.)

When a person falls into water and is exposed to this kind of death, violent

attempts to breathe are at first made: but each time that he rises to the surface, while air is received into the lungs, water passes into the mouth, which the drowning person is irresistibly compelled to swallow. In his violent efforts to breathe while his head is under water, a portion of this liquid is drawn into the air-tubes and cells of the lungs. The struggle for life may continue for a longer or shorter period, according to the age, sex, and strength of the person; but the result is, that the blood in the lungs is imperfectly aërated, the individual becomes exhausted, and insensibility follows. The mouth then sinks altogether below the level of the water—air can no longer enter into the lungs: a portion of that which they contain is expelled, and rises in bubbles to the surface: an indescribable feeling of delirium, with a ringing sensation in the ears, supervenes: the person then loses all consciousness and sinks asphyxiated. In the state of asphyxia, while the dark-coloured blood is circulated, convulsive movements of the body take place, and the contents of the stomach are sometimes ejected by vomiting. There does not appear to be any sensation of pain, and, as in other cases of asphyxia, if the person recovers, there is a total unconsciousness of suffering during the period when the access of air was cut off from the lungs. I state this from having accidentally experienced all the phenomena of drowning, up to the complete loss of sensibility and consciousness. (See, in reference to asphyxia from drowning, a paper by Mr. Eccles, 'Med. Gaz.' vol. 44, p. 657.)

Some persons who fall into water are observed to sink at once, without making any attempt to extricate themselves. This may arise from the stunning produced by the fall; and if the fall takes place from a great height, the effect is probably aided by the forcible compression which the chest then sustains, whereby the lungs become in great part emptied. Should the person be intoxicated or otherwise incapacitated, as by striking his head in falling, he may not again rise. These different conditions under which death may take place will sufficiently account for the difference in the appearances met with in the bodies of those who have died in water. Some medical jurists have considered that they who are submerged while living frequently perish by *syncope* or fainting, and in other instances by what has been termed 'syncopal asphyxia'—a mixed condition. It has been supposed that the state of terror into which a person may be thrown at the moment of submersion would be sufficient to bring on syncope; and this, it was believed, afforded an adequate explanation of the recovery of the apparently drowned, when the body had remained a long time in water. This opinion is to some extent supported by the results of recent experiments on animals. In other cases a fatal result may be accelerated by the impression suddenly produced upon the skin, from the difference of temperature between the body and the water. To those who are not accustomed to water, a sudden immersion produces a great and rapid cooling of the surface, and forces the blood into the internal organs. There is difficulty of breathing, or severe spasmodic respiration, with giddiness and other symptoms, which may render a person powerless to extricate himself. The effect of cold on the skin is seen in the contracted state of the cutis in the bodies of those who have been drowned during the winter.

Some have ascribed death in drowning to a congested state of the vessels of the brain—in other words, they conceive that death takes place in most cases by a species of apoplexy; but there appears to be no reasonable ground for this opinion. A mere fulness of the cerebral vessels is certainly of itself insufficient to justify this view: for upon the same evidence we might pronounce three-fourths of those deaths which are distinctly referable to other causes, to be dependent on apoplexy. The obstruction to the passage of the blood through the lungs is sufficient to explain why we meet with congestion in the vessels

of the brain in drowned bodies; but the occurrence of this congestion is probably posterior to the interruption of the cerebral functions. The most characteristic appearance of apoplexy—extravasation of blood on the brain—is rarely seen in the drowned; and probably, when it exists, it may be traced to mechanical violence before submersion, or to the head having come in contact with hard bodies beneath the water. Three instances are recorded in which effusion of blood on the brain was found: one was in the case of Leopold, Duke of Brunswick, who was drowned in the Oder during the German war (see Henke, 'Gericht. Med.' p. 327); the second was in a case which occurred in London in 1839; and the third is reported by Casper. A man was drowned in a marsh. There were the usual post-mortem appearances: the membranes of the brain were strongly congested, and blood was effused to the extent of an inch beneath the outer membrane (dura mater). In his experiments on animals, Riedell did not meet with effusion of blood in a single instance. ('Medical Gazette,' vol. 46, p. 478). In general, the term apoplexy is applied to those cases of drowning in which there is great fulness of the cerebral vessels; but in most of these there are also the usual signs of death from drowning. (Casper, 'Ger. Leich.-Oeffn.' 1853, 2, 110).

Those who die from apoplexy, concussion, or syncope, at or about the time they fall into water, cannot be said to die from drowning. A person so situated makes no effort to breathe, and it is only by interfering with respiration that the water operates. Admitting, then, that in strictness *asphyxia* is the sole cause of death in drowning, these mixed cases are of interest in medical jurisprudence, because the apparent may be mistaken for the real cause. It may be occasionally necessary to determine whether the person really died by drowning or not, *i. e.* whether he was asphyxiated by water or not; since an answer to this question may materially affect the position of a prisoner charged with homicide. The only conclusion at which we can arrive is, that many persons may fall into water, and appear to be drowned, whose deaths have actually preceded their submersion. For a case of this kind by Dr. Skrzeczka, see Casper's 'Vierteljahrs.' 1866, 2, 293. Again, there may be extensive but latent disease of the heart, which may fully account for sudden death irrespective of submersion. (See 'Lancet,' Nov. 16, 1850, p. 550.)

M. Devergie ('Méd. Lég.' vol. 2, p. 336) estimates that among one hundred persons who fall into the water, or are exposed to the chances of drowning, the causes of death are:

Asphyxia, pure	25·0	Asphyxia	87·5
——— and Syncope	62·5		
——— Cereb. Congestion			
Syncope, Apoplexy, or Concussion			12·5
			100·0

From this table we learn that out of one hundred bodies removed dead from water, where death was due either directly or indirectly to immersion, if the body were removed immediately after death, and examined soon after removal, the ordinary appearances of drowning would be present in about 25, they would be imperfectly apparent in about 62, and they would be wholly absent in about 12. (For a full examination of the causes of death in drowning, by Dr. Loeffler, see Henke, 'Zeitschrift der S. A.' 1844, 1, 1; also, a paper by Dr. Ogston, 'Med. Gaz.' vol. 48, p. 291.)

Period at which death takes place.—A witness may be asked how long a time is required for death to take place by drowning. In giving an answer to this question, cases of death from syncope or apoplexy must be excluded from our consideration. In these, circulation and respiration are simulta-

neously arrested. Some persons who are strong, who are good swimmers, and retain their presence of mind, may support themselves for a length of time in water; while others who are weak, delicate, and unaccustomed to the water, may struggle only for a few seconds, and then sink exhausted and lifeless. There are two very different points involved in this inquiry:—1. How long can a person remain *beneath* the surface of water without becoming asphyxiated (drowned?) and 2. After what period of entire submersion of the body may we hope to resuscitate a person? In regard to the first point, it may be observed that when the mouth is so covered that air cannot enter, asphyxia supervenes in the course of one or two minutes at the farthest, and the time at which this occurs does not appear to vary materially with the person. Perfect insensibility has supervened after a minute's submersion, and it is probable that in most cases a few seconds would suffice for the commencement of asphyxia. In the case of a healthy diver, who was accidentally submerged at Spithead, in July 1842, for *a minute and a half*, without the power of breathing, at the depth of eighty feet, it was observed that when drawn up his face and neck were much swollen and discoloured. He was faint but sensible, and recovered under treatment. In August 1864, a diver descended at Falmouth to about the same depth. From the time of his making the signal to be drawn up, *two minutes* only had elapsed before he was taken into the boat. He was then quite insensible, but he was able to place his hand across his mouth. His face, ears, and nostrils were covered with blood. He did not speak, but gave a convulsive struggle, and died soon afterwards. It was found, as in the previous case, that the pipe supplying air had burst, and that the valve for the outlet of foul air had become fixed. The difference between recovery and death was, in these two cases, represented by the interval of half a minute. ('Med. Gaz.' vol. 31, p. 90.) Observations made upon divers (sponge and pearl) show for how short a period a human being, even when practised in the art of diving, can continue without breathing. Dr. Lefevre, of Rochefort, found that among the Navarino sponge-divers, accustomed as they were to the practice of diving, there was not one who could sustain entire submersion of the body for *two consecutive minutes*. The average period of entire submersion was seventy-six seconds. ('Med. Gaz.' vol. 16, p. 608.) The longest time which the Arab divers of the Red Sea have been observed to remain under water was ninety seconds; the average period was seventy-five seconds. According to Mr. Marshall, the best pearl-divers of Ceylon could rarely sustain a submersion of more than fifty seconds. Thus then it would appear, from these and other observations, that asphyxia is probably induced in most persons in the course of a few seconds, and that at the furthest it occurs in from a minute to a minute and a half. But asphyxia is not synonymous with death: and while, in many persons, asphyxia may commence at or about the same period of time, there are probably few in whom, under complete submersion, the circulation would be arrested or death take place at precisely the same instant of time. Such a simultaneous arrest of the action of the heart in two persons must be the result of a pure coincidence. This medical question may be occasionally of importance in reference to the presumption of survivorship, as when husband, wife, and children have died from drowning under a common calamity. (See vol. 1, p. 170.)

Period for resuscitation.—The second point to be considered is, How long a period of entire submersion is required for death to take place, *i.e.* When is there no further hope of resuscitating a drowned person? This question is of importance in relation to the treatment of the drowned. The insensibility which is the result of submersion will give to a body which has been immersed only a few seconds or minutes the characters of apparent death; but we are not therefore to suppose that *the person is* irrecoverably lost, or to desist from

applying all the means in our power to restore animation. On the contrary, the means should be applied without delay, even to bodies which have remained so long in water as to afford, physiologically speaking, but little hope of ultimate recovery. A man who neglected the application of these would consign the body to certain death; while, by adopting an opposite course, he might, perhaps unexpectedly to himself, succeed in restoring life. Hence we are not to allow ourselves to be influenced, in the treatment of the drowned, by the shortness of the interval at which death most commonly takes place. Devergie states that it has been found impossible to restore some who had not been entirely submerged for more than a minute, even when the bodies were removed with all the warmth and pliancy of life about them; but, on the other hand, others have been resuscitated who, there was reason to believe, had been entirely submerged for five minutes. Many of the marvellous recoveries reported have no doubt been cases of the resuscitation of persons who had not been entirely submerged, *i.e.* whose heads were not entirely below water for the period alleged. In most of the recorded instances of recovery after alleged protracted submersion, the evidence has rested upon the loose statements of ill-informed persons incapable of making accurate observations on such a subject.

The late Dr. Woolley, who was for many years medical officer to the Royal Humane Society, informed me that in the Society's records he had met with only two cases of recovery after five minutes' submersion. In the Report of the Society for 1840 there are two cases of recovery after a minute and a half, and two after three entire minutes' submersion. In a case communicated to me in 1841, by Mr. Bloomfield, a boy recovered after a submersion of from five to ten minutes: another is reported of a girl, aged two years, after ten minutes' immersion ('Lancet,' July 1841). It is not certain whether the head of the child was under water during the whole of this period. A case of recovery after six minutes' alleged submersion will be found in the 'Medical Gazette,' (vol. 29, p. 78), and in another there was partial recovery after a submersion, it is supposed, of at least eight and probably thirteen minutes. In Vol. 31 of the same journal, p. 448, a man is stated to have recovered after having been fourteen minutes under water, but the time was not determined by actual observation. The longest case recorded, with any claim to authenticity, is one which occurred to Mr. Jennings, in which a woman is stated to have recovered by prompt treatment after a submersion of *twenty minutes* ('Am. Jour. Med. Sci.' April 22, 1853, p. 348). In my experiments I found that an animal could not be restored after its body had been entirely submerged for a period of four minutes; and in one instance which fell under my observation, a stout healthy man, who had been submerged five minutes, could not be restored, although he was submitted to treatment very soon after his removal from the water. It has been a general opinion that so long as any spontaneous movement of the heart continued there was a chance of recovery, but this strictly applies to the rhythmical pulsations, and not to the mere convulsive movements of the organ. Sir B. Brodie states, as the result of his observations on animals, that the rhythmical pulsations cease in from four to four-and-a-half minutes after submersion, and that no animal recovered after these had once ceased, although some convulsive movements of the heart manifested themselves for a longer period. ('Med. Chir. Trans.' 1861, vol. 44, p. 149). These facts lead to the conclusions—that in drowning life is very rapidly destroyed; that the time within which a person may be resuscitated is subject to variation; but that after five minutes' complete submersion there can be little hope of success by any method of treatment, and even then our efforts would probably fail unless the treatment were commenced immediately on the removal of the body from water. M. Guérard quotes a case in which a young man is said to have recovered after entire sub-

mersion for *an hour*. This case is reported to have occurred in 1774, but the evidence on the time of submersion is not satisfactory. ('Ann. d'Hyg.' 1850, 2, 306).

These views are in accordance with the experimental results recently obtained by a Committee of the Medico-Chirurgical Society. (Report on Suspended Animation, 'Med. Chir. Trans.' 1862, p. 449). Thus it was found by the Committee that *four minutes'* complete submersion in water effectually killed dogs, although after removal from water the heart continued to beat from four to five minutes. The continuance of the heart's action furnishes, therefore, no criterion of the power of recovery.

A submersion of a minute and a half was found sufficient to destroy the life of a dog. After only one minute's submersion, or if a large dog after a minute and a quarter's submersion, the animal recovered almost immediately on removal from the water. Other experiments showed that in asphyxia from simple privation of air a dog would recover after *four minutes'* suspension of breathing; but as in drowning a *minute and a half* was sufficient to destroy life without any sign of recovery, it was obvious that some additional cause was at work to render drowning as a form of asphyxia more speedily fatal than ordinary suffocation. This was found not to be owing to exhaustion from struggling, from the violent efforts made to breathe, or from the effect of cold in immersing the whole of the body, but to the introduction of water by aspiration into the minute air-tubes and cells of the lungs. This conclusion was derived from the following experiments. Two dogs of the same size were submerged at the same moment, but one had his windpipe plugged, so that no air or water could enter, while the other had not. At two minutes they were taken out together: the one with the windpipe plugged recovered at once, the other died. In three experiments dogs with their windpipes plugged were kept below the water for *four minutes*: the animals recovered perfectly when removed from the water. (Report, p. 459). An inspection of the bodies at once revealed the cause of the difference. In animals simply deprived of air by plugging the windpipe, the lungs were merely congested; but in those which were submerged in their ordinary condition, the lungs, besides being more congested and showing ecchymosed points on the surface and in the substance, contained in their bronchial tubes a bloody mucous froth, formed of water, blood and mucus, which completely filled the small air-tubes. The respiratory efforts made by the animal before death had caused the production of this froth, which formed a mechanical impediment to the entrance of air by the movements of the chest, as in respiration. The mucous froth or foam issued from the lungs on section, and appeared to penetrate their entire substance, which was saturated with water tinged with blood. The lungs were sodden with water, heavy, soft and doughy, so that they retained an impression produced by the finger and were incapable of collapsing. In the lungs of animals which recovered after a short submersion, little or none of this mucous froth was found in the air-cells. In the fatal cases the quantity was great in proportion to the time of submersion. There is no doubt that it is produced by the violent efforts to breathe which are made within a minute after submersion.

It may be inferred from these results that the power of recovery in human beings has a direct relation to the presence of the mucous froth in the air-tubes, and to the penetration of the substance of the lungs with water. The larger the amount produced, the less the hope of recovery; for when the lungs have undergone these changes they are physically unfitted either to receive or expel air by respiration—they are incapable of collapsing. Hence it is that a state of syncope is favourable to recovery, as in this condition there are no violent efforts at respiration when the head is below the surface of the water. In a case communicated by Dr. Woolley to Sir B. Brodie, a girl recovered after

having been exactly six minutes under water; but it appeared in evidence that she had fallen into the water in a state of syncope. ('Med. Chir. Trans.' 1846, 44, 149).

Treatment.—The facts above mentioned have a close relation to the treatment of the drowned. The subject is hardly of a medico-legal nature, but occasionally questions have arisen at coroners' inquests in reference to the propriety of the treatment adopted by a medical practitioner. When it is stated that conflicting methods have been apparently equally successful—that the warm bath and frictions, as well as artificial inflation of the lungs by various appliances, have each succeeded with some, and failed in the hands of others—it will be perceived that there is great difficulty in making a selection or laying down rules. Artificial inflation of the lungs appears *à priori* to be the proper plan for resuscitation; but when we consider the physical state of these organs in those who have struggled much and have made violent efforts to breathe while under water, it will be obvious that the lungs are frequently not in a condition either to receive or to expel air. The late Dr. Woolley, who had considerable experience in treating the drowned, informed me that, as a rule, he had seen no benefit from the introduction of air by artificial processes (see 'Med. Gaz.' vol. 17, p. 663), and that the warm bath (at 100°), with frictions to the skin, had been in his hands the most successful means of treatment. When some signs of animation were not elicited by the warm bath, there was but little hope of any other plan succeeding. In a remarkable case of recovery after fourteen minutes' submersion, reported by Dr. Douglas ('Med. Gaz.' vol. 31, p. 449), warmth and friction were the only means employed. Inflation of the lungs was tried but not persisted in, because it did not appear to be attended with any good effect. Artificial inflation in some form is now, however, generally employed, in addition to the application of warmth and stimulating frictions to the skin. The Committee of the Medico-Chirurgical Society, discarding the use of apparatus which is rarely at hand when most required, recommends the method of inflating the lungs suggested by Dr. Silvester, 'in which the action of the pectoral and other muscles passing from the shoulders to the parietes of the chest in deep inspiration, is imitated. An inspiratory effort is induced by extending the arms upwards by the sides of the head: on restoring them to their original position by the sides of the body, the expanded walls are allowed to resume their previous state, and expiration takes place, the quantity of air expelled being in proportion to that which had been previously inspired' (Report, p. 468). This plan has been adopted by the Royal Humane Society. The Committee have demonstrated by experiment that it is superior to the method recommended by the late Dr. Marshall Hall, inasmuch as it commences with the act of inspiration, while the latter begins with expiration, and it more completely fills and empties the air-cells of the lungs:—1. Remove from the neck and chest all articles of clothing; 2. Wipe the body dry, and cover it with dry cloths; 3. Clear the nostrils, mouth, and throat of all mucous froth, or of substances likely to interfere with free respiration: pull forward the tongue, and keep it in this position, so that it may not fall back and cover the opening of the windpipe; 4. Place the body at full length with the face downwards, the forehead resting on one arm: this is for the purpose of allowing all fluids to flow readily out of the mouth; 5. Ammonia, aromatic vinegar, snuff, or other stimulants, may be cautiously applied to the nostrils; and 6. If respiration is not quickly restored spontaneously, then the body should be placed upon its back, with the head slightly raised. The arms should be gently carried outwards and upwards from the chest, raised above the head, and maintained in this position for about two seconds. By this movement air penetrates into the lungs as during the act of inspiration. The arms are now lowered and brought closely to the sides of the chest, by which [illegible]ion is effected. Pressure on the lower part of the chest-bone (sternum)

aids this expiratory action. This movement should also occupy two seconds. These alternate movements of the arms may be repeated from twelve to fourteen times in a minute. All rough handling should be avoided. So soon as any spontaneous respiratory action is observed, warmth may be applied to the skin by the warm bath or otherwise, and stimulating frictions may be used, or simple frictions with warm flannels, &c. Heat should be applied especially to the region of the heart, the loins, soles of the feet, and palms of the hands. When the power of swallowing returns, warm water, alone or with a little brandy as a stimulant, may be given. The patient should then be placed in bed and allowed to sleep.

This treatment should be persisted in for some hours, except in those cases in which the body has been long under water, and is taken out cold and rigid. In Dr. Douglas's case (*supra*), there were no signs of returning animation until after the treatment had been carried on for eight and a half hours. The tendency to restoration is indicated by the occurrence of slight flushing in the face, with convulsive twitchings in the facial muscles, warmth of the skin, gasping or sobbing respiration at intervals, and sometimes convulsive movements of the body and limbs. The unfavourable signs are these :—Complete insensibility, coldness, and paleness of the body; no spontaneous act of respiration; entire absence of pulsation in the region of the heart; the eyelids half-closed, the pupils dilated, the lower jaw stiff, the fingers half-bent inwards, and the mouth and nostrils containing mucous froth, which is continually escaping from them. The chances of recovery are great in proportion to the shortness of the interval between the last expiratory efforts in the state of asphyxia and exposure to the air. In a very large proportion of all cases of recovery after submersion, the act of respiration in the form of sobbing, sighing, or gasping commences spontaneously soon after the person has reached the air, and the only treatment then required is not to interfere with this natural action of the chest. Whatever may be the plan adopted under such circumstances, if recovery take place it is immediately accredited with the favourable results. This is probably the explanation of the fact that means which have succeeded in the hands of one operator have utterly failed in those of another. In the latter case the lungs of the patient were probably in a state unfitted to receive air, and the patient was therefore beyond the reach of any treatment. Considering the kind of treatment to which the bodies of the drowned have been in some instances submitted, there is much truth in the observation of the late Sir B. Brodie—namely, that recovery has often followed not from the means used, but in spite of them ! Cases in which the submersion has been short, the respiratory struggles below water slight, and the treatment is applied immediately on removal from water, may be expected to recover; but under opposite conditions recovery is, with rare exceptions, hopeless. In Paris, from 1821 to 1826, out of 570 cases of drowning it is stated that 430 were resuscitated.

It is unnecessary in this place to describe in detail the method for restoring respiration recommended by the late Dr. Marshall Hall. It has been shown by experiment that it is less adapted to the intended purpose than the plan recommended by Dr. Silvester. It does not allow of the introduction of a sufficient quantity of air into the lungs, nor, if introduced, does it provide for its proper expulsion from them. (For a medico-legal examination of these methods of treatment, the reader is referred to a paper by Dr. Tardieu, in the 'Annales d'Hygiène,' 1863, 1, p. 312; and 1865, 2, 209; also to the 'Medical Times and Gazette,' February 1861, p. 131.)

Death from secondary causes.—Drowning may operate indirectly as the cause of death. Thus it has been repeatedly remarked that persons who have been rescued from water in a living state, and who have apparently recovered from the effects of submersion, have died after the lapse of some minutes or hours: others have *lingered for one or two days*, and then have sunk apparently from

exhaustion. In those who perish soon after removal from water, death may arise either from exhaustion or from the obstruction of respiration by the penetration of water into the air-cells of the lungs. In the case of Mr. *Gudge* (May 1857) death was clearly owing to the secondary effects of submersion. The deceased was removed from the water and conveyed to the Westminster Hospital. He was cold and insensible, but he breathed tolerably well, and had a fair pulse. In about three hours he became conscious, and spoke a little. The insensibility subsequently returned, accompanied by great difficulty of breathing, and he died in about twenty hours from the time of submersion. Dr. Marcet states that spasm of the glottis has been among the severe secondary symptoms in those who have been removed from the water apparently drowned. A severe spasm of this kind manifested itself in one case while placing the person in a warm bath. ('Med. Times and Gazette,' February 1857, p. 148.) When death takes place at a remote period, it may be caused by disease; and a question will then arise, whether the disease was produced by the immersion in water or not. Such cases occasionally present themselves before our Courts of Assize. In one of these (*Reg.* v. *Pulham*, Gloucester Summer Assizes, 1845), the prisoner was charged with the death of the deceased by pushing him into a pond of water, from the effects of which he died. The deceased was an old man; he was taken out of the water in an exhausted condition, and died a few weeks afterwards. One medical witness referred death to the effects of the immersion; but as he had not seen the deceased after the violence, and there was no clear account of the cause of death, the prisoner was acquitted. In most of these cases it will be found exceedingly difficult to connect death with the immersion, when the fatal result does not take place until after so long a period of time. As the basis of medical evidence, we must rely upon the nature of the disease alleged to have been caused by the immersion—*i.e.* inflammation of some cavity or organ, and its progress until death without intermediate recovery or interference by improper treatment.

POST-MORTEM APPEARANCES.

In conducting the examination of the body of a drowned person, it is necessary to remember that the external and internal appearances vary much, according to the length of time during which the body may have remained in water, or the period that may have elapsed after its removal and before it is examined. Thus, in reference to the bodies of two persons drowned by a common accident, if one is examined immediately, and the other is not removed from the water until after the lapse of several days, and is then inspected, the appearances will be different. So, if two bodies are removed at the same time, and one is immediately examined, while the other is not inspected until a month after removal, the proofs of drowning which may be discoverable in the former, will have disappeared in the latter. A protracted exposure of the drowned body either to water or air, especially if the temperature is high, renders an inspection useless for the purposes of evidence.

1. *External appearances.*—Supposing that the body has remained in the water only a few hours after death, and the inspection has taken place immediately on its removal, the *skin* will be found cold and pallid—sometimes contracted, under the form of 'cutis anserina,' or goose-skin. ('Ed. Med. and Surg. Jour.' Jan. 1837.) Casper considers this to be a usual accompaniment of death from drowning. A contracted state of the skin when found certainly furnishes strong evidence of the body having gone into the water living. The skin is often covered to a greater or less extent by livid discolorations. The face is pale and calm, with a placid expression; the eyes are half-open, the eyelids livid, and the pupils dilated; the mouth closed or half-open, the tongue

and congested, frequently pushed forwards to the inner surface of the
netimes indented or even lacerated by the teeth; and the lips, toge-
h the nostrils, are covered with a mucous froth which oozes from them.
· has noticed in the male subject a remarkable contraction of the penis.
who have gone living into the water and been drowned, this appear-
s been repeatedly observed by Casper and Kanzler; and the former
hat he has not met with this condition of the male organ after any
rm of death. In the bodies of strong and robust men it was found
nd strongly retracted into the skin. ('Ger. Leich.-Oeffn.' ii. 109.)
body and limbs of a person recently drowned are usually found re-
but cadaveric rigidity appears to come on quickly in cases of drowning,
body is often stiffened in the convulsed or distorted attitude which it
re had at the time of death. In a case observed by Mr. Beardsley, the
'a man who was drowned under ice was found with the arms stiffened
ttitude in which he was endeavouring to support himself on the ice.
l. 1, p. 66.) In the accident which occurred on the ice in the Regent's
January 1867, by which a large number of persons were at once pre-
l into ice-cold water, it was observed that among thirty-four dead
rought to the Marylebone Infirmary, many of them had become stiff-
the attitude of active exertion—the hand and arm thrown forward,
ating or sliding. The muscles remained rigid for forty-eight hours.
ge 65.) Those who were brought in living were in a state of violent
ent. Some were delirious, and others staggered about like drunken
. The faces were flushed, and the pupils dilated. These were suffer-
n shock as a result of the cold immersion (cold-stroke).
dico-legal question may arise in reference to this condition of the dead
amely, whether the act of drowning is likely to produce a convulsed
acted state of the limbs. (See the case of *Reg.* v. *George*, Hereford
sizes, 1847, vol. 1, page 67.)
changes produced in the bodies of the drowned by putrefaction in
ave been elsewhere described. (See vol. 1, p. 125.)
ng external appearances, it has been noticed that the fingers and surface
ody occasionally present *abrasions*. Gravel, sand, mud, weeds, or other
ces may be found locked within the hands or nails of drowned per-
r in the act of drowning, as common experience testifies, a person will
t any object within his reach, and in his efforts to extricate himself he
coriate or wound his fingers. Substances floating in the water are also
es found in the nose, mouth, and ears. There are, however, many cases
ning in which such appearances do not exist. There may be no sub-
or the drowning person to grasp: this will depend in a great degree
e fact of the water being deep or shallow, of its being confined within
w channel or not, and many other contingencies. In all cases, when
on is senseless before he falls into the water, or when his death is oc-
l by syncope, he will of course be incapable of making those exertions
re necessary to the production of such appearances, and it is probable
is frequently occurs among women who are accidentally exposed to
g. When the body has remained several days in water, the skin of the
f the hands and soles of the feet is found thickened, white, and sodden,
ult of imbibition.
ternal appearances.—On examining the body of a recently drowned
the lungs and heart present the appearances usually indicative of
a. The venous system is generally gorged with dark-coloured liquid
If death has not taken place from asphyxia, or if the body has re-
a long time in water before an inspection is made, the lungs and heart
present the characters about to be described. Some physiologists have

asserted that the *blood* remains fluid in the bodies of the drowned. Orfila has stated that, with one exception, he had not met with blood in a coagulated state. Much more importance has been attached to this appearance than it really merits. Some observers have found the blood coagulated in the drowned, and I have repeatedly seen coagula, like those usually met with after death, in the bodies of animals which were drowned for the sake of experiment. If the blood is found generally liquid, this may be due to the imbibition of water, or to putrefactive changes. Riedell found the blood in the heart and large vessels to contain coagula, in inspections made from two hours to five days after death. ('Med. Gaz.' vol. 46, p. 478.) The state of the blood in the drowned formed a subject of inquiry in *Reg.* v. *Barker and others* (York Winter Assizes, 1846). From the remarks above made, it will be perceived that it may be found either coagulated or uncoagulated in those who go into the water living and die by drowning.

Riedell found the epiglottis commonly raised. The *lungs* are more or less congested, and more generally distended than collapsed. Casper and Kanzler, as a rule, found them much increased in volume, and completely filling the cavity of the chest, so that when the chest was opened they protruded out of it. This did not depend on mere congestion or fulness of blood. Casper states that he met with a similarly inflated condition of the lungs in cases in which death had been caused by poisonous gases. ('Klinische Novellen,' 1863, p. 543; and 'Ger. Leich.-Oeffn.' vol. 2, p. 112.) The most accurate observations in recent cases of drowning show that the lungs are distended—in a flabby condition, and that, owing to the penetration of their substance by water, they have lost their usual elasticity. Hence an impression made upon them by a finger is preserved, as in an œdematous limb. Riedell long ago pointed out this flabby and dilated condition of the lungs as a special characteristic of drowning. Owing to their structure being penetrated by water, he found that, although they floated, they were three or four times as heavy as in their natural state. ('Med. Gaz.' vol. 46, p. 478.) The lungs are usually in the condition of imperfect expiration, and from the large quantity of fluid in them, the chest does not readily collapse. The observations of Riedell on the state of the lungs in the drowned have since been fully confirmed by the experiments of the Committee of the Medico-Chirurgical Society. On making a section of any part of the lungs, a bloody frothy liquid escapes, air and water being mixed together in the air-cells. The appearances above described are only likely to be observed, in a well-marked form, when the body is examined soon after death. The *windpipe*, *bronchi*, and minute *air-tubes* of the lungs, in a recently drowned subject, are filled more or less with a *mucous froth*, tinged with blood, as a result of the last violent efforts at respiration, when the mouth has sunk below the level of water. This appearance is not always met with. Thus it is stated not to have been found in the bodies of those who have sunk at once below the surface, and have not again risen to breathe. But from recent experiments on animals made by a Committee of the Medico-Chirurgical Society, its presence in the air-passages does not depend on the fact of a person rising to the surface, although this may increase the quantity, but rather upon the violent spasmodic efforts made to breathe, under circumstances in which water alone can enter the lungs. A dog was kept entirely under water for three minutes and a quarter. It made the usual convulsive efforts to breathe while in the water, but not after removal from it, as the animal was then dead. A bloody froth escaped from its mouth, and on inspection its lungs were found to be filled with this froth. Another dog was submerged for a minute and a half. When removed, it opened its mouth, but was unable to make any respiration: it was dead. A large quantity of bloody froth was found in the air-tubes and lungs. A dog was kept with its head

below water for one minute, and it recovered when withdrawn from the water. An hour afterwards it was inspected, and there was but little froth in the lungs. These facts show that the mucous froth is produced, even in two minutes, when there is entire submersion of the head; and its quantity appears to be in proportion to the length of submersion, and the violence of the efforts made to breathe.

The presence of mucous froth in the air-passages may be regarded as a characteristic of asphyxia by drowning. When discovered in the lungs, associated with a watery condition of these organs, it furnishes a satisfactory proof of this mode of death. As its presence depends on the retention of air in thin vesicles diffused through the air-tubes, it is obvious that, except in recent inspections, *i.e.* within one or two hours of death, it may have wholly or partly disappeared. Water passing in and out by the windpipe may destroy it—also the exposure of the body to a high temperature. This may account for the fact that it is not always observed in the inspection of the bodies of the drowned when removed from water. A similar appearance is stated by Orfila to have been found in the bodies of those who have been hanged, or who have died from apoplexy; but this statement has not been confirmed by other observers. Violent efforts at respiration may, however, produce it, especially if, owing to the loss of power of swallowing, any liquid should find its way into the windpipe. A case of poisoning by laudanum is reported, in which water containing sulphuric ether was forced down the throat of a person after the power of swallowing had nearly ceased. On dissection a quantity of reddish-coloured froth was found, filling up part of the windpipe. Independently of the presence of *water* (sometimes mixed with mud, sand, or weeds) in the larger air-tubes, a portion of this liquid is generally drawn into the lungs by convulsive efforts at respiration. It fills the cells, and penetrates the substance of the organs, giving to them that flabby or doughy consistency above described. In some cases the contents of the stomach may be found in the windpipe and lungs: this occurs when a person has been drowned with a full stomach. Vomiting takes place, and the vomited matters are drawn into the lungs by the attempt to breathe.

The state of the *heart* in the drowned has given rise to some discussion. In asphyxia the right cavities are generally found to contain blood, while the left cavities are either empty or they contain much less than the right. Out of fifty-three inspections made by Dr. Ogston, the right cavities were found empty only in two cases, and the left cavities empty in fourteen. ('Med. Gaz.' vol. 48, p. 291.) In a case of drowning which was examined by Dr. Bishop, the right side of the heart contained scarcely any blood; and in another case, communicated to me December 1857, the only medical difficulty regarding death by drowning presented itself in an emptiness or non-distension of the right cavities of the organ. The facts and observations accumulated by my friend Dr. Norman Chevers, of the Calcutta Medical Board, show that a full condition of the heart, although a common, is not an invariable concomitant of asphyxia, either from drowning or any other cause. ('Medical Jurisprudence for India,' 1856, p. 441.) It has been elsewhere remarked, that the action of the heart continues after the stoppage of respiration, and that the period at which this organ ceases to contract is variable. Hence, in some cases, there may be sufficient power in the right cavities to contract upon their contents, and to expel, more or less completely, the last traces of blood received by them from the body. Emptiness of the right cavities of the heart must not, therefore, be regarded as inconsistent with death from drowning; at the same time, it cannot be taken as an absolute proof that the person has died from asphyxia. Dr. Riedell states that in half the number of instances which had fallen under his observation, the two sides of the heart contained equal quantities of blood; in

the other half, the right side contained the larger proportion. In one case only the emptiness of the left side contrasted strongly with the fulness of the right.

A greater or less fulness of the vessels of the *brain* is described as one of the appearances met with in drowning; but this, when it exists, is probably a consequence of a congested state of the lungs. Some remarks have been already made on this subject, and from these it is evident that the state of the cerebral vessels can afford no presumption that death has taken place by drowning. In regard to the cases which I have had an opportunity of examining, the quantity of blood contained within the cerebral vessels has rarely been so great as to call for particular notice.

In examining the abdomen, it will commonly be found that the *stomach* contains water, which appears to enter into this organ by the act of swallowing during the struggle for life. This may be salt or fresh, according to the medium in which the drowning has taken place. The quantity is subject to great variation: sometimes it is large, at other times small, and in some instances no water whatever is to be met with. The absence of water may probably indicate a rapid death, as there could have been no power to swallow. Orfila has remarked, that the mucous membrane of the stomach and bowels is occasionally much discoloured in drowned subjects. He observed also, that when drowning took place while the process of digestion was going on, the mucous membrane of the stomach often had a pinkish, red, or violet tint. When the dead body had remained a long time in water, this membrane was observed to acquire a deep violet or brown colour. A knowledge of this fact will be of importance in those cases in which a person is suspected to have been poisoned previously to submersion. It has been said that the diaphragm is generally much raised towards the chest; but this may depend on gaseous putrefaction, and the increase in the size of the abdomen by the formation of gas in the intestines. The urinary bladder in some cases contains urine—in others it is perfectly empty. Casper found it empty in one-half of the cases which he examined. It is obvious that the state in which the bladder is found must depend on its condition at the time at which the drowning occurred. (See, in reference to the appearances in the drowned, a paper by Dr. Ogston, 'Med. Gaz.' vol. 47, pp. 763, 854 *et seq.*; also another by Dr. Riedell, 'Med. Gaz.' vol. 46, p. 478; and Casper, 'Ger. Leich.-Oeffn.' vol. 1, p. 87; 2, p. 105; and 'Klinische Novellen,' 1863, p. 523.)

Dr. Bishop communicated to me the result of an inspection, made by Dr. Bull of Hereford and himself, in the case of a woman whose body had been in the water about an hour and a half. The inspection was made twenty-four hours after death. The contracted state of the skin (cutis anserina, or goose-skin) was well marked. The vessels of the membranes of the brain were somewhat congested, the principal seat of congestion being at the base. The tongue was neither swollen nor indented, but pallid. Mucous froth in considerable quantity was found in the windpipe: the vesicles were exceedingly minute in the upper part, but at the lower portion of the tube they were as large as a mustard-seed. A small quantity of clear fluid flowed through the bronchial tubes when the lungs were raised. The lungs were not collapsed: they crepitated on pressure, and were rather bloodless anteriorly; posteriorly they were somewhat gorged with blood, apparently from gravitation. The stomach had about a pint of fluid in it, which seemed to be water mixed with some undigested meat. The lining-membrane was slightly pink in colour. The right side of the heart was very flabby, and contained scarcely any blood. The blood throughout the body was quite fluid. The appearances of asphyxia were not so well marked in the lungs and heart of this subject as they usually are; nevertheless, the state of the windpipe, air-tubes, and stomach was quite characteristic of death from drowning. As a contrast to this, and as showing the variable nature of the

appearances met with in the drowned, the following case, reported by Professor Dunglison, is worthy of notice. A woman, in full health, was observed to be intoxicated on the banks of the Schuylkill, U.S., about one hour before her body was discovered in shallow water; she could not therefore have remained long under water. The body was examined by Dr. Farquharson, one of the resident physicians, about sixteen hours after death. The face was swollen, and of a mottled purple colour. The arms and thighs presented patches of discoloration, and a small quantity of whitish froth issued from the mouth, the amount of which was not increased by pressure upon the chest, although a small quantity of watery fluid escaped when the body was turned over. On opening the chest, numerous old pleuritic adhesions were found, on the removal of which, and by the consequent compression of the lungs, a discharge of watery froth took place from the mouth. All parts of the lungs were gorged with blood, and were much heavier and of a darker red colour than in the normal state. The posterior portions of both lungs were engorged. The windpipe and air-tubes contained the same kind of watery froth or frothy mucus as that which had issued from the mouth. The liver was large, engorged, and of a bright-red colour. The right cavities of the heart and the coronary veins were filled with dark fluid blood; the left cavities were empty. ('Phil. Med. Examiner,' March 1845, p. 169.)

The late Mr. Semple, of Islington, reported in the 'Lancet' (May 29, 1841) two cases of drowning, in each of which he had made a careful inspection. The subjects were both adult women. In one the cerebral vessels were nearly empty—the lungs rather voluminous, the bronchial tubes containing a small quantity of frothy mucus—and the right side of the heart contained a quarter of a pound of fluid blood. There were slight marks of inflammatory redness about the mucous membrane of the stomach and intestines—accounted for in the stomach by digestion going on at the time of death: the organ contained about a quart of fluid matter, consisting of food mixed with water, probably swallowed in the act of drowning. There were no traces of poison in the stomach, nor marks of violence on the body. In the other case, the eyes were half-open, hands not clenched, fingers straight—the vessels of the brain very much congested. The lungs were distended, the windpipe was empty, and the air-tubes in their smaller ramifications were filled with a soapy tenacious mucus. The right side of the heart and larger veins were distended with fluid blood. The gullet contained a clear watery fluid—the stomach three ounces of a clear fluid destitute of smell and colour, with the exception of a green tint from a minute quantity of vegetable matter, resembling the confervæ of ponds. The liver was much congested. This woman was found drowned in a shallow pond. The body in each of these cases was examined recently after death.

It would be wrong to place reliance on the appearances presented by a dead body after two or three weeks' submersion. The putrefactive changes which take place in the cavities (vol. 1, p. 125) will so alter the appearances of the viscera, that a medical man may be easily misled in forming an opinion of the cause of death. In an inquest on the body of *Edward South*, held at Lynn in March 1871, it appeared that it had been three weeks in the water. One medical witness said that from the presence of water in the stomach, and the fluidity of the blood, his opinion was that deceased had died from drowning. Another contended that from the lungs being found in a collapsed state, death had not taken place from drowning. The jury could therefore come to no satisfactory verdict. The proper course in such a case would have been to state that the changes which had taken place after death had rendered it impossible to form a correct opinion. The difficulties which arose in Kirwan's case (*Reg.* v. *Kirwan*, Dublin Commission Court, 1853), depended in a great measure on the length of time which had elapsed before the body of the deceased woman was

inspected. On the day following its removal from the water, the body was superficially examined *externally*. Thirty-one days after death, and twenty-six days after burial, it was exhumed, and a proper inspection made. The lungs were found engorged with blood; the heart empty; the stomach empty and contracted. The absence of the usual appearances found in recent cases of drowning was considered by some of the witnesses to prove that the woman had *not* died by drowning; therefore that she had died from some other cause, and her body afterwards placed in the water. Considered apart from the moral evidence, the inspection of the body threw no light whatever upon the cause of death. Medical evidence based upon appearances so long after death is untrustworthy. (See the case of *Sarah Stout*, *post*, p. 21.)

WAS DEATH CAUSED BY DROWNING?

For a correct solution of this question, it will be necessary to consider how far the appearances met with in the drowned are characteristic of this form of death. Among the *external* signs of drowning, when the body is seen soon after death, are paleness of the surface, a contracted state of the skin (cutis anserina), and the presence of a mucous froth about the nostrils and lips. The absence of these appearances, however, would not prove that the person had not been drowned; for if the body had remained some time in water, or if it has been long exposed to air before it is seen by a medical man, the skin may undergo various changes in its condition and colour, and mucous froth may no longer be found adhering to the nostrils and lips.

State of the skin.—The goose-skin or cutis anserina which is frequently observed in the drowned, shows that the skin possessed the living power of contractility at the time of immersion. Wagner suggests that the appearance might be produced in a dead body if thrown into cold water immediately after death, *i.e.* while the skin is warm. As none but assassins would be likely to resort to this proceeding, the objection would, if admitted, leave the fact of drowning still to be made out by an internal inspection. This contracted condition of the skin could hardly be mistaken for a naturally rough or horny skin, as suggested by Casper ('Ger. Leich.-Oeffn.' vol. 1, p. 89). As this condition of the skin is not invariably present, even in the recently drowned, and as it is observed chiefly in drowning during cold weather, its absence must not be taken to negative the hypothesis of drowning.

Substances grasped in the hands.—In speaking of the *external* appearances of the body, it was stated that foreign substances are sometimes found locked within the hands, or lodged under the nails of drowned subjects. This fact may occasionally afford strong circumstantial evidence of the manner in which a person has died. If materials are found grasped within the hands of the deceased which have evidently been torn from the banks of a canal or river, or from the bottom of the water in which the body is found, we have strong presumptive evidence that the person died within the water. For although it is possible to imagine that the deceased may have struggled on the bank, and have been killed prior to submersion, yet in the value attached to this sign we are assuming that there are no marks of violence on the person, nor any other appearances about the body sufficiently striking to lead the examiner to suspect that death had occurred in any other way than by drowning. If the substance locked within the fingers or finger-nails is sand of the same character as that existing at the bottom of the river or pond, or portions of weeds there growing, it is difficult to conceive any stronger evidence to establish the fact of death having taken place subsequently to submersion. The abrasion of the fingers is a circumstance of minor importance: no value could be attached to this state of the fingers as an indication of a person having perished

by drowning, unless it were in conjunction with the appearances above described. A witness would be constrained to admit in many cases, that the fingers might become abraded or excoriated after death, or even before submersion; while in no case could he be called upon to make in regard to substances found grasped within the hands, an admission which would invalidate the evidence deducible from this condition. This must be regarded as a satisfactory proof of a person having been alive after his body was in the water. It is well known that when two or three are drowned by the same accident, they are not unfrequently found clasped within each other's arms,—a fact which at once proves that they must have been living when submerged: so if a dead body is discovered still holding to a rope, cable, or oar, no further evidence is required to show that the deceased must have died from drowning. Dr. Roth attaches great importance to the closing or contraction of the hands and feet as evidence of this kind of death. There is a whitish with a more or less blue colouration of the skin and a persistent contraction of the flexor muscles of the hands and feet. He states that he has found these appearances within half an hour of the time of submersion, and that they last until putrefaction sets in. ('Ann. d'Hyg.' 1867, 1, 223.)

The internal appearances upon which medical jurists chiefly rely as proofs of death from drowning are—first, water in the stomach; and secondly, water with a mucous froth in the air-passages and lungs.

1. *Water in the stomach.*—Dr. Riedell found that, in the majority of cases of drowning, water passed into the stomach. In animals previously killed, and placed for twenty-four hours in water with the mouth wide open, no fluid penetrated into the stomach. ('Med. Gaz.' vol. 46, p. 478.) Water commonly passes into the stomach of a living animal while drowning as a result of the act of swallowing. It has been observed, that when an animal is stunned prior to submersion, water does not pass into the gullet, and when syncope occurs none will be found. As a proof that its entrance into this organ depends on the act of swallowing, it may be stated that the quantity in the stomach is greater when an animal is allowed to come frequently to the surface and respire, than when it is maintained altogether below the surface. The power of swallowing is immediately suspended on the occurrence of asphyxia, and in this way we may satisfactorily account for the difference observed in the two cases. The water thus found is in variable quantity: and there are some cases of drowning in which water is *not* present in the stomach. It was found by Dr. Ogston, of Dundee, in five cases out of seven. ('Ed. Med. and Sur. Jour.' Jan. 1837.) In dissecting cats which had been drowned, I have repeatedly remarked the absence of water from the stomach: in these instances the animals had been invariably kept under water from the first moment of their submersion, and thus in a condition but little favourable to the power of swallowing. Water does not readily penetrate into the stomach of a body which has been thrown in after death; the sides of the gullet being too closely contracted to allow of the passage of fluid. If putrefaction has advanced to any extent, it is possible that some water may enter; but a medical man may easily judge from the general state of the body, how far this process may have been concerned in the admission of fluid into the stomach and intestines. Orfila has suggested that water may be found in the stomach of a person apparently drowned, in consequence of this liquid having been drunk by the deceased, or artificially injected by another into the stomach after death. It is difficult to conceive under what circumstances the latter objection could be made, or what purpose it would answer. In relying upon the presence of water in the stomach, it may be admitted that the deceased may have drunk water before his body was submerged. The body of a child, aged two years, was taken out of a piece of water and inspected. The usual appearances of drowning,

with one exception, were absent. There was no congestion in the brain or lungs, there was emptiness of the cavities of the heart, no water in the air-passages, and thus a want of evidence of death from apoplexy or suffocation. The blood was of a clear red colour, and very fluid: the stomach was almost filled with water, in which a portion of the food floated. No cause of violent death was apparent on inspection. The presence of water in the stomach was explained by the fact that the child had been playing with its nurse on the banks of the stream. It complained of intense thirst, and the nurse gave it a copious draught of water. Almost immediately after this, the nurse having walked away, the child must have fallen from the bank into the water. (Casper, 'Ger. Leich.-Oeff.,' vol. 1, p. 91.) The discovery of water in the stomach, except under circumstances to be presently mentioned, is not, therefore, a necessary proof that it has been swallowed during the act of drowning.

It is of course presumed that the liquid contained within the stomach is of the same nature as that in which the body is immersed; for it is possible that fresh water may be found in the stomach of a person drowned in salt-water, and in such a case it would be obviously improper for a medical witness to affirm from the mere presence of water, that the person had died where his body was discovered. If the water contain mud, straw, duckweed, moss, or any substances like those existing in the pond or river where the drowning occurred, this is a proof, when the inspection is recent, of its having been swallowed by a living person. In the case of *Mary Ashford* (*Rex* v. *Thornton*, Warwick Summer Assizes, 1817), some duckweed with about half-a-pint of water was found in the stomach of the deceased. The body was discovered in a pond in which duckweed was growing. This fact sufficed to prove that the deceased must have been living when immersed. The following case occurred at Maidstone in July 1843. The body of a young woman was found in the Medway under circumstances that led to a strong suspicion of murder. The medical witness deposed that there were no marks of external violence, nor any sign of the deceased having struggled with the supposed murderers. There was some long grass at the back of the mouth, and in the throat. The grass was not the same as that growing on the banks of the river, but such as grew at the bottom, which the deceased had probably swallowed after having gone living into the water. On this evidence the accused was discharged. A case in which the question of death by drowning was answered affirmatively under similar circumstances is reported by Dr. Rawitz (Casper's 'Vierteljahrs.' 1865, i. 59). The body was found in a pond, with injuries on the head. It was obvious from the appearances that the deceased had had the power of swallowing after immersion in the water. In a case investigated by Mr. Image (*Reg.* v. *Carnt*, Bury St. Edmund's Lent Assizes, 1851), the body of deceased was found with her head among water-weeds, some of which were discovered in her throat, and the finger-nails were filled with sand and mud, as if clutched convulsively. These facts aided in proving that deceased had died from drowning. The absence of water from the stomach cannot, however, lead to the inference that the person has not died from drowning, because in some instances it is not swallowed, and in others it may drain away and be lost after death before an inspection is made.

2. *Water with mucous froth in the air-passages and lungs.*—If the body is removed from the water with care, and is examined at a sufficiently early period, these appearances will furnish satisfactory evidence of death from drowning. The mucous froth is generally tinged with blood; its mode of production has been elsewhere described (*ante*, p. 12), and other conditions have been pointed out in which such an appearance may be produced. Dr. Riedell regards it as a constant sign of death by drowning. In all his experiments and observations he states that he found a frothy fluid in the windpipe,

bronchi and lungs. After death it gradually disappeared from the air-tubes by osmosis, but not from the lungs. The fluidity of this froth is, he contends, a distinctive character of death by drowning, and is not met with in any other form of death ('Med. Gaz.' vol. 46, p. 478). The presence of a frothy fluid would undoubtedly show that liquid, from some cause, had penetrated into the air-passages; and when taken in conjunction with the presence of water in the substance of the lungs, it may be considered to furnish conclusive evidence of death from drowning. On the other hand, its absence does not necessarily prove that a person has not died from this cause. If none is found in a body recently after death, this may have been the result of syncope or apoplexy, and there may have been no convulsive efforts at breathing prior to death. A mucous froth may not be found when the body has remained for a long period in the water after death, since by the free passage of this fluid into and out of the air-tubes, the froth, although formed in the first instance, may have disappeared. If, after removal from the water, the body is exposed to the air for several days before it is examined, it is rare that this appearance is seen. The mucous froth may have been formed in the windpipe, but it may have entirely disappeared, owing to the incautious manner in which the body has been handled on its removal from water. Thus, if removed with the head depending, any liquid which may be contained within the lungs will escape, and in passing through the air-passages it will remove the froth.

3. *Water and foreign substances in the lungs.*—It has been elsewhere stated that in the act of drowning, water is drawn with considerable force into the lungs, by violent attempts at inspiration. The aspiratory force thus exerted by the lungs is considerable. It has been found that when the heads of animals were plunged below mercury, some of this fluid metal, in spite of its great density, was actually drawn into the lungs and globules of it were seen in the air-cells. *A fortiori*, this takes place in a greater degree with water which is forcibly drawn into, and permeates, the spongy texture of the lungs, rendering death more rapid and recovery more difficult than in other forms of asphyxia. This aspiratory force of the lungs has been measured, and is found, in small animals, to be equal to raising a column of mercury four inches in height. Not only is water thus drawn in, but sand, mud, weeds, or other substances floating in it, are also carried into the air-tubes and cells of the lungs. When the water is mixed with weeds or mud, and water presenting the same admixture is found in the throat and stomach, this is strong evidence that the body has been plunged into the medium when the power of breathing and swallowing still existed, and hence that the deceased has been drowned. An attention to the condition of the stomach and lungs together, will therefore be of importance in cases of alleged child-murder by drowning, since it may aid in proving or disproving the charge. In a case tried at the Central Criminal Court, April 1861, in which I was consulted by Mr. Tyte, of Harrow, some greenish-coloured mud was found in the throat, lungs, and stomach of an infant whose body had been removed from a pond. The prisoner was acquitted, chiefly on the suggestion that she might have thrown the body of her child into the water when she believed it to be dead, and one or two gasps might have accounted for the appearance presented by the stomach and lungs! When a dead body is thrown into water, and has remained there some time, water, with fine particles of sand, mud, weeds, &c., may pass through the windpipe into the bronchi, and be there deposited. Water under these circumstances, however, does not penetrate into the substance of the lungs as by aspiration during life, and the amount which passes through the chink of the glottis is small. If simply an after-death effect, the water is found only in the larger air-tubes *unaccompanied* by mucous froth. In most

cases, however, the effect of aspiration, as a result of living power, is so manifest, that the examiner can have no difficulty in forming an opinion. Dr. Norman Chevers, of Calcutta, was required to examine the body of a child found dead in a tank at a distance from the house of its parents. The internal appearances showed that the child had died from drowning. The air-passages contained green vegetable-matter, and the right air-tube was almost completely filled with so large a portion of an aquatic weed doubled together, that it appeared astonishing how such a body could have passed into the windpipe. It was proved that no weed of this kind was growing in the tank in which the dead body was found; and further inquiry led to the discovery, that the body of the boy had been found by a woman in a tank near his home, in which a weed like that taken from the air-passages grew abundantly. She had conveyed the corpse to the more distant tank, which belonged to a person against whom she bore a grudge! ('Medical Jurisprudence for India,' 1856, p. 351.) The only reasonable explanation of the facts was, that the child must have been living when placed in the tank in which the weed grew, and have drawn it in by its efforts to breathe. Its presence indicated a living act, and that the body was not put after death into the water of the first tank, but when dead it was subsequently carried to the second tank and placed there for a malicious purpose.

A medical man may be occasionally required to express an opinion on the length of time that may have elapsed since the act of drowning, when the dead body of a person has been discovered in water. The rules which have been suggested for the guidance of a medical witness on these occasions are given at page 126, vol. i. They are open to so many exceptions, owing to the different degrees in which putrefaction takes place in bodies exposed under similar circumstances, that they are but of little service as a basis for medical evidence. On the production of adipocere as a result of the decomposition of the body in water, and the properties of this substance, see vol. i. p. 128.

CHAPTER 53.

SUMMARY OF MEDICAL EVIDENCE—CASES INVOLVING MEDICO-LEGAL QUESTIONS—SPECIFIC GRAVITY OF THE HUMAN BODY LIVING AND DEAD—CO-INCIDENTAL CAUSES OF DEATH—MARKS OF VIOLENCE ON THE DROWNED—ACCIDENTAL FRACTURES—WAS THE DROWNING THE RESULT OF HOMICIDE, SUICIDE OR ACCIDENT?—DROWNING IN SHALLOW WATER—DROWNING FROM PARTIAL IMMERSION.

In the preceding chapter the whole of the evidence which a medical inspection of a drowned body is capable of affording has been brought under review. The only characters on which reliance can be placed, as medical proofs of death from drowning, are—first, the presence of a mucous froth in the wind-pipe and air-tubes; secondly, of water and froth in the air-tubes and air-cells of the lungs; and thirdly, of water in the stomach. An early inspection of the body may enable a medical man to come to a satisfactory conclusion that death was or was not caused by drowning. The longer this inspection is delayed, the more ambiguous the evidence becomes, since the froth rapidly disappears from the air-tubes, while water may not be found in the lungs and stomach. The great cause of failure in obtaining medical proofs of drowning is generally the unavoidable delay before an inspection is made.

A man died suddenly in the Rue St. Antoine, at Paris, in February 1830, and the body was soon afterwards brought to the Morgue. It there underwent a

minute examination; but there were no marks of violence externally, nor were there any appearances of disease internally to account for death. In the course of the inspection it was found that the larynx, windpipe, and air-tubes contained a mucous froth. In the larynx this was white, but it had a red colour in the air-tubes. M. Devergie, who conducted the inspection, states that it only differed from the froth as it exists in the drowned, in the circumstance of its being in large vesicles; but he candidly owns that, had he not been certain of the contrary he should have presumed that he was examining the body of a person who had died by drowning. He offers no suggestion as to the cause of this appearance. There was a large quantity of water in the stomach, amounting to almost a pint, and the lungs were gorged with blood, as in cases of asphyxia. Supposing that this body had been thrown into the river after death, it is clear that most medical men, relying upon what are usually regarded as well-marked proofs of this kind of death, would have declared this to have been a case of drowning.

If a case of this kind is of rare occurrence, we may take an instance of a different description. A person may be suffocated, or may die from epilepsy, apoplexy, or from a sudden attack of any fatal disease which may not be indicated by well-marked appearances after death; the body is thrown into or falls into water, and remains there a few days. When taken out, water may be found in the lungs, but there may be none in the stomach; there may be no mucous froth in the windpipe, and the lungs are found more or less congested. How is a practitioner to determine whether death has actually taken place within the water or not? In the case of a suffocated body, without marks of external violence, it would be impossible; since persons may die in water, or at the moment of immersion, under circumstances in which the appearances of drowning would be either obscure or entirely wanting. Dr. Ogston, of Aberdeen, relates an instructive case of death from epilepsy, under circumstances which might have led to a strong suspicion of violent death, from the position in which the dead body was found. A man was in the act of leaving a privy, when he was seized with an epileptic fit, and fell with his face in a piece of dirty water, which did not exceed a foot and a-half in breadth, with a depth of from three to four inches. When discovered after death, only his mouth and nostrils and one cheek were found to have been under water. ('Med. Gaz.' vol. 47, p. 763.)

If, in examining a body taken from water, we found the appearances of mortal disease, or marks of external violence sufficient to destroy life, there would be strong ground for suspicion. Why the body of a person who has really died from *natural causes* should be afterwards thrown into water it would not be easy to explain upon any hypothesis of innocence, but we can readily appreciate the motive when murderous violence has been used. After the lapse of five or six weeks, especially if the body has been removed from the water for the greater part of that period, none of the usual appearances of drowning will be met with: in the present day, no practitioner would think of seeking for evidence under such circumstances. The medical opinions expressed by the witnesses for the prosecution at the trial of *Spencer Cowper*, for the murder of *Sarah Stout* (Hertford Assizes, 1699), are therefore worthy of remark, if only as affording an example of what is to be avoided on these occasions.

The body of the deceased was found floating in a stream about thirteen hours after she was missed. It was buried, and *six weeks* afterwards was exhumed and examined. No water was found in the stomach or lungs, which, it was stated, were not putrefied. Six medical men deposed that when a person was drowned, water was invariably taken into the stomach and lungs; and as none was found in this instance, they were of opinion that deceased came to her death by some other *means;—in* other words, that, as alleged in the

indictment, she had been murdered by the prisoner, and her dead body afterwards thrown into the water! The prisoner, who was a man of education and good social position, asked one of these witnesses whether, after six weeks' time, water would remain in the body? The reply to this intelligent question was, that there should be some, because 'it can't come out after the body is dead *but by putrefaction*; and there was no putrefaction.' The medical witness does not appear to have had the least suspicion that the deceased might have died without swallowing any water, or that the quantity swallowed might have been small, and entirely lost in six weeks by transudation through the soft coats of the stomach and the substance of the lungs. The prisoner was acquitted.

The dead body of a person may be found in water under circumstances which may lead to a strong but erroneous suspicion of homicidal interference. The following case occurred in May 1854:—A gentleman, æt. 30, who had retired to his dressing-room in apparently good health, was for some time missing, and on breaking open the door his body was found lying in a sponge-bath which he was in the habit of using. He was quite dead, but there was still some warmth about the body. He was lying on his face in the bath, with his nose and mouth below the level of the water. Some time before he was thus discovered, a fall had been heard in his room; but no particular notice was taken of it. The body was inspected twenty-four hours afterwards. Externally there was a recent wound of the skin of the right arm above the wrist,—this had apparently been caused by pieces of a washhand-basin which had been broken. There was much congestion of the brain and its membranes. The heart was slightly enlarged, and the walls of the left ventricle were thickened. In the right ventricle only a small clot of blood was found: with this exception the cavities were perfectly empty. There was some cartilaginous deposit in the aortic valves. The right lung was healthy, and presented no congestion: the left was wasted, but slightly congested. An inquest was held, when the medical and other evidence tended to show that, although the body was found with the face under water, the deceased had not died from drowning, but that he had been seized with a fit—probably epileptic,—that he had fallen into the sponging-bath, breaking the washhand-basin in the fall, and thus producing the recent wound of the right arm. It turned out that he had previously had two epileptic fits. Mr. Kesteven has related a similar case, in which a man who was just about to jump into the water to rescue a boy who had fallen in by accident, was suddenly seized with paralysis and died in three hours. On examination there was effusion of blood on the brain, and this accounted for the apoplectic seizure ('Med. Gaz.' vol. 34, p. 295.)

In consequence of the uncertainty attendant on the appearances of drowning, barristers have considerable advantage in cross-examining those medical witnesses who appear to support the theory of the prosecution that death took place from this cause. Legal ingenuity is here often strained to the utmost, to show that there is no certain *sign* of drowning, and therefore that the deceased must have died from some other cause. The general impression among non-medical persons appears to be that, whether in drowning or suffocation, there ought to be some particular *visible change* in some part of the body to indicate at once the kind of death; but it need hardly be said that this notion is founded on false views, and if the reception of medical evidence on the cause of death be made to depend on the production of some such positive and visible change of structure, then it would be better at once not to place the parties charged with the offence upon their trial, because the crime could never be proved against them. A medical inference of drowning is founded upon a certain series of facts, to each of which, individually, it may be easy to oppose plausible objections; but taken together they furnish evidence as strong as is commonly required for the proof of any other kind of death.

A trial took place at the Central Criminal Court, April 1841, in which the witnesses were severely cross-examined on the appearances caused by drowning. (*The Queen* v. *Longley*.) The mother of the deceased child was charged with murder by drowning it. When the body of the child was removed from the water, its mouth was closed. The prisoner's counsel endeavoured to make it appear that it was most usual to find the mouth *open* in cases of drowning; and then went on to say, 'that the only proof of suffocation by drowning which had been adduced by the medical witness was the mucous froth found in the air-cells: that this could not have gone through the mouth was quite certain, because the mouth was proved to have been closed. The air might have passed into the air-cells of the child whilst struggling in its mother's arms just as well as whilst struggling in water!' After what has been stated regarding the mucous froth, it is not necessary to point out the fallacy of the assumptions involved in this argument; but it is much to be regretted, for the interests of justice, that medical evidence should be allowed to be presented to a jury in such a perverted and erroneous form. The state of the mouth did not affect the question of death from drowning. The mucous froth in the air-passages was the best possible evidence of this kind of death. The mouth might have been spasmodically closed after its production. It is surprising, when medical facts are so misrepresented in a defence, that even in a case of undoubted criminality (as in this particular instance) a conviction should ever occur. (See also the case of *The Queen* v. *Owen*, *Thomas*, and *Ellis*, Stafford Lent Assizes, 1840.) In a case in which Mr. Image, of Bury St. Edmund's, gave evidence (*Reg.* v. *Carnt*, Suffolk Lent Assizes, 1851), the medical facts, although furnishing conclusive evidence of drowning when taken together, were individually objected to. The deceased was found dead in a pond. The body was removed after it had been lying about four hours in the water, and was carefully examined by Mr. Image forty-one hours after death. The hair was hanging back, wet, very muddy, with leaves and weeds entangled in it; the ears were muddy, the right eye ecchymosed, pupils slightly dilated, lips bluish, and there were bluish patches on the face. Slight scratches were observable on the right side of the face. The skin had a dull leaden hue. The jaws were fixed, teeth tightly clenched, and the tongue not protruding. The nails were filled with sand and mud. There were severe bruises on both arms near the elbow, equal in extent and intensity. The tongue was greatly congested, and covered with froth and mud, which extended backwards to the throat and nostrils as well as into the larynx and windpipe, and the upper divisions of the air-tubes of the lungs. The lungs were engorged and greatly distended: when cut in any part frothy mucus was abundantly poured out, and a watery liquid escaped on pressure. The heart was healthy; the right and left cavities were filled with black fluid blood. There were no coagula. There were small pieces of green weed in the air-tubes (corresponding to weed in the pond). The vessels of the neck were distended with dark-coloured liquid blood, without any coagulum. The stomach was healthy; it contained partially-digested food, with about a pint of liquid mixed with mud and sand. The liver was enormously congested, bleeding profusely at every section. The bladder was quite empty, and contracted to the smallest size. The sinuses (large vessels) of the brain were not much distended, and the substance of the organ was not greatly congested. Mr. Image gave an opinion, which was perfectly justified by these appearances, that the deceased had died from drowning, and that she had probably been held forcibly under water. The accuracy of this opinion, in spite of an attempt to overthrow it in the defence, was established by the confession of the criminal before execution.

In *Reg.* v. *Griffin* (Shrewsbury Lent Assizes, 1861) the prisoner was charged with the murder of her child by drowning it. The dead body was found on the bank of a river. *The defence was that* it was dead when she put it into

the water. The medical evidence satisfactorily proved that there were no marks of violence externally—only a few abrasions (rubbings of the skin) as the result of accident. There was some sand in the mouth, nose, and ears. The brain was healthy; the membranes were slightly congested. The lungs were congested and contained mucous froth, which was also found in the windpipe mixed with sand, particles of which were seen in the smaller air-tubes. The lungs were fully distended. The heart contained on the right side fluid blood; the cavities on the left side were empty. In the stomach were four ounces of fluid, with some food partly digested. All the organs were healthy. An attempt was made in the defence to refer death to convulsions, but the appearances, taken as a whole, were only consistent with death from drowning. The learned judge in this case asked the medical witness a question for which those who give evidence on death from drowning should be prepared: it was whether he was not influenced in coming to a decision by the fact that the body of the child had been found on the bank of a river. The witness said that he should have come to the same conclusion if he had not known of that circumstance, in which statement he was perfectly justified by the appearances, for there is no disease affecting children which will produce them. If the child had had convulsions, it was still exposed while living to the action of water. The prisoner was convicted.

Specific gravity of the human body.—At the trial of *Spencer Cowper* (ante, p. 21) for the murder of *Sarah Stout*, the buoyancy of the human body, living and dead, formed an important part of the enquiry. The body of the deceased was found floating, at about five or six inches below the surface of the water, in a pond which was only five feet in depth. From this circumstance it was assumed that deceased could not have gone living into the water, because—as it was alleged, and attempted to be proved by scientific as well as nautical testimony for the prosecution—the body of every person who died from drowning sank, while a dead body thrown into water immediately after death from some other cause than drowning floated! A sailor was called to support this strange piece of nautical philosophy, and although his statements were contradictory, he swore that in all the battles and shipwrecks in which he had been engaged, he had uniformly observed that those who were really drowned sank, while those whose bodies were thrown in dead floated! Hence, he contended, it was necessary to attach weights to the bodies of those who died at sea. 'Why,' said this witness, 'should Government be at that vast charge to allow threescore or fourscore weight of iron to sink every man, but only that their swimming about should not be a discouragement to others?' ('Smith's Anal. of Med. Ev.' 278.) The medical witnesses for the prosecution contented themselves with stating that the bodies of persons who were drowned sank, without taking into consideration that there were circumstances in this particular case which might have accounted for the floating, and have entirely set aside the hypothesis of death before immersion. This was the body of a woman, and in women there is less bone and more fat than in males—conditions which tend to render their bodies lighter than water. The deceased was drowned in her clothes, and the clothes of women contain much air, which tends to give to the dead body buoyancy for a time. In addition to these facts, there were some stakes near the body, which might have aided in supporting it by the clothes. The presence of a small quantity of air in the lungs, or of gases in the intestines at the time of death should, apart from all other considerations, have prevented the fact of the body floating from assuming that mysterious importance which was assigned to it by the Court and some of the scientific witnesses. Fortunately for the ends of justice, other sailors were called for the defence, and they deposed that, after their battles and shipwrecks, they had always observed the bodies of the dead to sink, whether drowned or not, and that weights were attached to bodies buried at sea not for the purpose of sinking them, but of preventing them from floating as

a result of putrefaction. This view of the question was much nearer the truth. Although it is not likely that the life of anyone will ever again be endangered by a question of this kind, it is proper to state a few facts connected with the specific gravity of the human body.

The specific gravity of the human body in the *living* healthy state, is made up of the combined specific gravities of its different parts; so that, as in all heterogeneous solids, it is a very complex quantity. In the first place, about 72 per cent. of the weight of the body consists entirely of water—hence the question of specific gravity can refer only to the remaining 28 per cent. of dry solids. The only part of the body which is lighter than water is fat. The specific gravity of this is 0·92, and it is calculated that the proportion of fat in an adult is about five per cent. of the weight of the body, or one-twentieth part. The specific gravity of muscle is 1·085, of brain 1·04, of the soft organs generally 1·05, of the lungs containing air 0·94, and of bone, the heaviest part of the body, 2·01. The lightness of the fatty portions is more than counterbalanced by the weight of the skeleton (about ten and a half pounds in the male, and nine pounds in the female), so that the naked human body, placed on water, has a slight tendency to sink. This tendency diminishes just in proportion to the quantity of the body immersed; because all those parts which are out of water, not being supported by water, become so much additional absolute weight to the portion immersed. Hence the frequent cause of death by drowning. An inexperienced person exhausts himself by exertion, raises his arms continually out of the water, and as often sinks, owing to their weight having just so much effect on his body as if a leaden weight had been suddenly applied to his feet to sink him. When the *whole* of the living body is immersed, the specific gravity, owing to the expansion of the chest, differs so little from that of water, that a very slight motion of the hands or feet will suffice to keep a person on the surface. The head, owing to the weight of the bones of the skull, has always a tendency to sink below the level of water. There are two circumstances which cause the specific gravity of the body to vary. If the quantity of *fat* is proportionably large, it will be diminished, and such a person will float more readily than another in an opposite condition. On the other hand, a large proportion of *bone* renders a person heavier than his bulk of water; and his body will sink more rapidly than that of another. These two modifying causes of buoyancy are liable to constant variation; hence the different accounts given by experimentalists relative to the specific gravity of the human body. The bodies of women are, *cæteris paribus*, of less specific gravity than those of men: the skeleton is smaller, and there is a greater proportion of fat—hence they more readily float. Infants and young children float with the greatest ease; the quantity of fat is usually in large proportion, and the bones are light, the earthy matter being not yet fully deposited. Thus, in infanticide by drowning, the body of the child rises very speedily to the surface, if, indeed, it does not remain altogether upon it.

There are some other points to be considered in relation to the buoyancy of the living human body. 1. *Respiration.*—It is the fact of the lungs being filled with air that gives the general lightness to it. If these organs were emptied, and the chest contracted, then the specific gravity would be considerably increased: hence it follows that, *cæteris paribus*, a person with a large and capacious chest floats more easily than one whose chest is small and contracted. Hence, also, in a living person the body has a tendency to rise out of water during inspiration, and to sink during expiration, the quantity of water displaced under these two opposite conditions of the respiratory organs being very different. The entrance into water with the chest nearly emptied, as the result of a loud scream or shriek, is very unfavourable to the buoyancy of the body.

The fact of *clothes* being *on the person* may also make a difference, either,

from their nature, in serving to buoy up the body, or from their weight to sink it more deeply. Women are sometimes saved from drowning by reason of their clothes floating, and thus presenting a large surface to the water; it is partly owing to this circumstance that their bodies often remain floating on the water immediately after death. This happened in the case of *Sarah Stout* (*ante*, pp. 21, 24). In a case of suicide at Plymouth (January 1849), it was proved at the inquest that the body of the deceased floated on the sea-water for half-an-hour after the act of drowning: it was probably buoyed up by the clothes. But it is to be observed that the specific gravity of sea-water is 1·026. This differs but little from the specific gravity of the muscles and soft organs; hence the human body floats much more readily in sea than in fresh water, and indeed, except for the weight of the skeleton, it would have but a slight tendency to sink in the sea. I have found by experiment that every structure of the human body, excepting bone, floats in the water of the Dead Sea, which is remarkable for its great specific gravity (1·117). I am indebted to Mr. W. J. Cooper, Coroner for Portsmouth, for the account of a case in which a drunken man, æt. 40, who had gone to bathe in the sea was accidentally drowned. His body did not sink. It was observed to be floating with the face downwards, and the mouth below the level of the water: when turned over, froth issued from the mouth: the man appeared to be alive, but not sensible. An attempt was made to resuscitate him by the aid of the warm-bath and other means, but these failed, probably owing to the water which had penetrated the substance of the lungs. The appearances met with in the body were somewhat peculiar. The lungs were fully distended, but there was no bloody mucus or water in the air-tubes. In the windpipe and left bronchial tube, portions of the contents of the stomach were found (pieces of cabbage, &c.); the heart was perfectly empty; the stomach contained a quantity of food half-digested, but no water. The medical witness attributed death to apoplexy, followed by an attack of vomiting, a portion of the food having been drawn into the windpipe by an effort to breathe. The floating was probably owing to the average specific gravity of the man's body not being greater than that of sea-water. The bodies of women have been found floating on the surface of ponds or rivers within a few hours of the period at which death by drowning must have occurred. Dr. Procter, of York, informs me, that a woman who was seen on the banks of a river at half-past eleven in the evening, was found drowned at eight o'clock the following morning. The body was floating on the water with the face downwards. In December 1853 another case occurred, within my own knowledge. A factory-girl fell into a river, while walking along the bank in the evening: the body was found floating on the surface of the water the following morning. In December 1857 an accident occurred in Whitehaven, in which a woman was drowned: the body floated immediately after death. In December 1864 I was consulted by Mr. Aspinall, of Hassingden, in the following case:—The dead body of a married woman was found floating on the surface of a pond, about three or four feet deep, not far from her house. She had been missed from her bed a few hours, and had on only her night-dress. The body was floating with the head and abdomen downwards, the head and legs depending. There was no *post-mortem* examination. Owing to the floating of the body, and the mental condition of the husband, it was supposed that he had first murdered his wife and had then thrown her dead body into the water. There was nothing but the floating of his wife's body to support this hypothesis, and this readily admitted of another explanation. The deceased was a small-boned woman, with a fair amount of fatty deposit about her. There were no stakes or projections in the pond by which the body could be supported, and the buoyancy could not be referred to the clothes. The specific gravity of her body could have differed but little

from that of water; and as she was found floating with her mouth downwards, the air in the lungs had been probably retained, and was sufficient to support the trunk. There had been no struggling: there was no sand, mud, or weeds in her hands. She had made no effort to save herself, and had probably deliberately destroyed herself by placing her head at once under water.

It may be laid down as a general rule, that the recently *dead* body unclothed is, when left to itself, *heavier* than water, and sinks when immersed. The expulsion of air from the lungs and their penetration by water, combined with the fact that the bones and all the soft parts excepting the fat, are of greater specific gravity than water, offer a sufficient explanation of the sinking. After a variable period, generally not more than a few days, the body will rise again to the surface, and float. The period of its rising will depend—1st, on the specific gravity of the body; 2ndly, on the nature of the water, whether salt or fresh; 3rdly, on the access of heat and air in facilitating putrefaction. If the gases generated find an escape, the body will sink: more gases may form, and then it will again rise, so that the sinking and rising may become alternate phenomena. A small quantity of air collected in the abdomen, as a result of putrefaction, will suffice for the floating of the body. Thus, taking the specific gravity of the dead body at 1·08 to 1·1, it would require but little air to keep it at or near the surface of the water. But a dead body, whether death has been caused by drowning or not, may not sink at all, owing to some one of the counteracting causes above mentioned.

Marks of violence on the drowned.—The chief enquiry with regard to marks of violence on the bodies of the drowned is, whether they have resulted from accident or design. In forming an opinion, a witness must give due value to the accidents to which a body floating loosely in water, may be exposed. Ecchymoses of considerable extent are sometimes seen on the drowned, when the bodies have been carried by a current against mechanical obstacles in a navigable river or canal. If the deceased fell from a considerable height into water, his body in falling may have struck against a rock or projection, and thus have produced extensive marks of violence. Dead bodies taken out of wells often present considerable marks of violence of a vital character when the deceased persons have fallen in accidentally, or have thrown themselves in intentionally. The presence of these marks must not create a hasty suspicion of murder. It is manifestly impossible to lay down any specific rules for forming a decision in cases of this kind, since, probably, no two instances will be met with which will be perfectly similar in the details. In clearing up these doubtful points, everything must depend on the tact and acumen of the practitioner who is called upon to conduct an investigation. The first question which he has to determine is, whether the injuries on the body were produced before or after death. (See WOUNDS, vol. 1, p. 459). If after death, then they ought to be obviously of accidental origin. Accidental violence may sometimes be of a serious nature, so serious that a practitioner might well doubt whether it did not indicate that the deceased had been violently treated prior to submersion. If a dead body were taken out of water, with one or both limbs dislocated, or the vertebræ of the neck fractured, and a surgeon was asked whether such injuries could be accidental and coincident with or consequent on drowning, the answer would probably be in the negative. But an instance has occurred in which both arms were accidentally dislocated at the shoulders in the act of drowning: I allude to the case of a man who jumped from the parapet of Old London Bridge into the Thames. This exploit, it appears, he had previously performed with impunity, but on the last occasion he sank and was drowned. Both his arms were found dislocated at the shoulder-joints, in consequence, it is presumed, of his having fallen with them in the horizontal position, instead of *placing them closely* to his sides. The concussion

of the arms on falling into the water had sufficed to produce the accident. ('Smith's For. Med.' p. 228.) Here, then, we have a proof that even the mechanical resistance offered by water alone may give rise to marks of violent injury on the person. Effusion of blood from this cause may take place into the cavities of the head, chest, or abdomen. Dr. N. Chevers has informed me that he assisted in examining the body of a sailor who fell into water with his head downwards; and it was found on inspection that there was an extravasation of blood in the head beneath the arachnoïd membrane, which there was every reason to believe had been produced by the fall.

It has been elsewhere observed, with respect to superficial marks of violence, that bruises or contusions are not always visible on the bodies of the drowned when they are first removed from water. The great point with regard to all marks of violence on the drowned is to throw light upon the questions—1st, whether drowning was really the cause of death; and 2ndly, whether, if so, the act was the result of accident suicide, or homicide. This last question does not concern a medical witness so much as a jury, who will determine it from the facts, medical and general, proved before them.

There is one case, of rare occurrence, in which a practitioner would be apt to be misled by trusting to appearances found on the drowned. If a dead body were removed from water with a deep ecchymosed circle round the neck, evidently produced by a cord or ligature, but no traces of which could be found, it is not improbable that a suspicion would be at once raised that deceased had been murdered by strangulation, and the body afterwards thrown into water. An accident occurred some years since in which a gentleman and his wife were thrown into the water by the overturning of a small boat. The lady was drowned. On an examination of her body a livid circle was found round her neck, as if she had been strangled, but no ligature to account for it. She had evidently died by drowning, and the mark on the neck had been produced by the string of a cloak which she wore at the time of the accident. In her struggles to reach the boat it is presumed that the tide had drifted the cloak in an opposite direction, and had thus produced the usual appearance of violent strangulation. It is not improbable that the constriction produced, accelerated death. Barzellotti mentions the case of a man who was drowned in the Po while being escorted along the banks of that river, as a prisoner, by a party of soldiers. The man attempted to escape, and was drowned. Besides the ordinary appearances of drowning, there was a deep livid circle, extending completely round his neck, and immediately below this another mark, but paler in colour. The skin over the windpipe was ecchymosed. It was at first alleged that the deceased had been strangled by the soldiers, and his body thrown into the water; but from the appearance of the marks, and other circumstances, Barzellotti gave it as his opinion that they had been produced by the collar of a coarse linen-shirt which had been tightly buttoned around the deceased's neck: the collar had contracted from the imbibition of water, and had thus caused the appearance of strangulation, like any other ligature. ('Questioni di Medicina Legale,' vol. 1. p. 329. For another case, see Hencke's 'Zeitschrift,' 1840, vol. 1, p. 126, Erg. H). The following case was communicated to me as having occurred during the heavy floods in the winter of 1839. A man was carried away and drowned in attempting to ford a swollen stream. When the body was found it had been so placed by the current, that the fore-part of the neck was locked against the stump of a tree, giving rise to an ecchymosed patch like that which is sometimes produced by manual strangulation. [For the report of another case, in which there was much violence to the neck, see Hencke's 'Zeitschrift,' 1842, vol. 1, p. 258, Erg. H.]

It might be said, that in cases of this description circumstantial evidence would commonly show how the mark had originated. In admitting the truth

of this observation, we must remember that circumstances, as matters of proof, do not always present themselves to our notice, or occur to our minds, at the precise time that the law stands most in need of them. While, then, we use great caution in drawing an inference when there are such strong grounds for suspicion, we should not neglect to examine carefully the most trivial appearances. In a remarkable case of murder, in which the body of the deceased was discovered in a millstream, there was only one slight ecchymosed depression in the fore-part of the neck, as if from a finger. The surgeon suspected from this, that the deceased had been strangled by the pressure of a hand on the neck. The marks of drowning in the body were wanting, and the medical suspicion of the real cause of death was afterwards confirmed by the confession of the criminal. Incised wounds may be found on the body which are quite irreconcilable with any theory of accident. (Case of *Reg.* v. *Upton*, Leicester Summer Assizes, 1864.)

Accidental fractures in the drowned.—*Fractures* are not often met with in the drowned as the result of accident. Certain fractures likely to be followed by immediate death may forbid the supposition of their having occurred after drowning, and a careful examination of the body may show that they were not likely to have arisen from accident at or about the time of submersion. This point was raised in *Reg.* v. *Kettleband* (Nottingham Winter Assizes, 1843), where the prisoner was charged with the murder of his son, a boy aged ten years. The deceased was found dead in a pond soon after he had been seen healthy and well. An inquest was held, and as usual no inspection of the body was required by the coroner, and the jury were directed to return a verdict of 'found drowned.' An inspection was, however, subsequently made. The neck was observed to be very loose, and on further examination the toothlike process of the second vertebra of the neck was found to be separated from the first (the atlas), and the ligaments were ruptured! The three medical witnesses who gave evidence at the trial deposed that this displacement had caused death by compressing the spinal marrow, that the injury had occurred during life, that it was not likely to have been caused by accident from a fall into the water, as there was no mark of a bruise about the head, and the pond was proved to be small, with a soft muddy bottom. All agreed that such an injury was not likely to have arisen from a blow or a fall under any circumstances, but it required for its production that the body should be fixed, and the head forcibly rotated on the trunk. It was in itself sufficient to account for immediate death, and it could not occur by accident after death from any other cause. Hence it was inferred—1st, that death could not have been caused by drowning; 2ndly, that it had resulted from the compression of the spinal marrow by displacement of the second vertebra; and 3rdly, that this injury must have been intentionally produced by some person prior to submersion. Circumstances fixed the crime on the prisoner, and the jury returned a verdict of manslaughter, although the nature of the injury, admitting that it was not the result of accident, proved that the prisoner must have acted with a most cool and deliberate intention to destroy life. This case furnishes a serious commentary on the practice of some coroners, in denying the necessity for an inspection, and in directing what is called an open verdict of '*found drowned*,' when a body is taken out of water!

It is an important medico-legal question, whether fractures of the *vertebræ of the neck* can occur from accident alone, at or about the time of drowning. In the above case, the medical witnesses had probably good reasons for denying that the injury was accidental, although such an opinion cannot always be safely expressed merely from the absence of marks of violence on the head. In August 1858 a gentleman, in jumping from a bathing-machine head-foremost into water more *shallow than he* had expected, caused a fracture and

displacement of the cervical vertebræ, which led to death. Mr. South quotes the case of a man who threw himself into a river to bathe from a height of seven or eight feet, the water being only three feet deep. He rose to the surface, but fell back senseless. When he recovered his consciousness, the account he gave of the accident was, that he felt his hands touch the bottom of the river, but to save his head drew it violently back, upon which he lost all consciousness. He died in about ten hours, and on examination the skin of the back of the neck was ecchymosed, the interspaces of the muscles were gorged, and the spinal canal was filled with blood. The body of the fifth vertebra of the neck was broken across about the middle of its depth, and the two pieces were completely separated from the lateral parts. As there was no mark of contusion or dirt on the head, Reveillon, who reports the case, believes that the fracture arose from muscular action, and not from a blow received by striking the bottom: but this is doubtful. In another instance related by Mr. South, a sailor jumped headlong into the sea to bathe, a sail being spread three feet below the surface. He immediately became motionless, and died in forty-eight hours. The fourth and fifth vertebræ of the neck were found extensively fractured, and the spinal marrow was crushed and lacerated. ('Chelius's Surgery,' Part 6, Fractures.) In this case the fracture must have resulted from contact with the water or the sail; but as the latter was freely floating, this would be a yielding medium: hence this serious injury may occur accidentally in cases in which we might not be prepared to look for it. (For an important medico-legal case, involving many questions connected with marks of violence on the drowned, see 'Ann. d'Hyg.' 1839, 2, 195.)

Was drowning the result of homicide, suicide, or accident?—Although the question whether the act of drowning was the result of suicide or murder properly falls within the province of a jury, there are certain points in relation to it which here require to be noticed by a medical witness. In the first place, it is not to be imagined that an examination of the body will develope any differences in either of the three supposed kinds of death. So far as the phenomena of drowning are concerned, they are the same, and they are accompanied by the same appearances after death in each case. In drowning which is accidental or suicidal it is not usual, as it has already been observed, to meet with marks of violence on the person, except such as are purely of *accidental origin*, and have commonly been produced *after death*. In accidental drowning this is almost a constant rule: but if the person has fallen from any height, his body may be injured in the fall, either by projections on the banks of a river or canal, or by mere concussion on the water—allowance for either of which we must be prepared to make, according to the situation of the spot from which the person is supposed to have fallen.

It is calculated that drowning is the cause of death in nearly *one-half* of all suicides; but this of course will vary according to localities. A boy not more than seven years of age has been known to commit suicide by drowning. In *suicidal* drowning we have a difficulty to encounter which we do not meet with in that which is *accidental*. A man may have attempted suicide by some other means previously to throwing himself into the water: thus then, besides the accidental violence of accidental drowning, we may meet with violence on the person evidently indicating wilful perpetration. What is the nature of this violence?—Is it to be defined?—Can it always be distinguished from that which is positively *homicidal?* The answers to these questions must depend on the circumstances proved in each case. I have notes of three cases in which men cut their throats deeply just before throwing themselves into deep water. In another instance poison was swallowed shortly before the suicidal act of drowning. The discovery of poison in the stomach of a drowned person does not furnish any proof that the act was homicidal. M. Toulmouche has col-

lected a number of cases of great interest in this respect, as they show the circumstances which may lead to a medical presumption of suicide or homicide. ('Ann. d'Hyg.' 1868, 1, 154.)

Drowning in shallow water.—Homicide has been sometimes presumed from the peculiar circumstances under which a body has been discovered. Thus, for instance, it was formerly a debated question, whether a person intent on suicide could actually drown himself in *shallow* water. This question has been long since settled in the affirmative by the occurrence of some well-authenticated cases. It appears to have been raised originally on the theoretical view, that the resolution of a suicide would fail him in such a situation, and that, having the means of escape, he would lose no time in extricating himself. It need hardly be stated that the mere immersion of the mouth in water not more than a few inches deep, will produce all the phenomena of death by drowning, with the exception that little or no water would probably be found in the stomach. Devergie mentions an instance which occurred in May 1833, where a man was found drowned in a small stream, his face towards the ground, and his head just covered by the water, which was not more than a *foot* in depth. On dissection there were all the appearances of drowning present, and a large quantity of sand and gravel was found occupying the windpipe and smaller air-tubes. (Op. cit. vol. 2, p. 332.) A case is mentioned by Dr. Smith, in which a woman committed suicide by breaking a hole in the ice of a pond, during the winter, and thrusting her head into the water, the rest of her body being out. In May 1837 a man was found dead near Mitcham in Surrey. He was discovered lying on his face in a small stream of water only six inches deep. The water was so shallow that it did not cover the deceased's body or his head. There was clear evidence that this was a case of suicidal drowning. In November 1855 a man was found drowned in a water-cistern, which at the time had in it only fourteen inches of water.

The discovery of bodies under these circumstances does not necessarily establish that the act was suicidal. It is quite possible that one or more assailants may hold a person's head in such a position sufficiently long to destroy life; but as the person might be capable of making resistance, we ought then to find some marks of violence on the body. So, again, such a position is by no means incompatible with accidental drowning; and on this it may happen that a medical practitioner will be called to express an opinion. A man in a state of deep intoxication, or when suddenly attacked by syncope, epilepsy, or apoplexy, may fall with his face in a gutter, ditch, or small pool of water; he may die in this position, not having the power to extricate himself. Even marks of violence on the body must not be too hastily construed into proofs of murder. Not long since a case of this description gave rise to a trial for murder in one of our midland counties. A man was found dead with his face in some melted snow, and there were several severe contusions on his body. The evidence showed that, after a quarrel, he had left a neighbouring inn much intoxicated; and it was rendered extremely probable that he had perished accidentally on his way home. There was no reason to suppose that he had been murdered. Infants, from mere helplessness, may be drowned under similar circumstances.

Drowning from partial immersion.—There is no doubt that murder by drowning may be perpetrated without the *whole of the body* being immersed in water. A case of this kind, which was the subject of a criminal trial, was referred to me by Mr. Aldred, of Norwich, in March 1841. The case was tried at the Norwich Lent Assizes of that year (*The Queen* v. *Yaxley*), and the prisoner was convicted. It appears that the mode in which the prisoner destroyed her infant child was by immersing its head for a few minutes in a pail of water. She removed it before it was quite dead; but it soon died, with slight

convulsive motions of the limbs. The case was rendered obscure by the fact that the whole of the body had evidently not been immersed; and the only conceivable means of drowning were in a small duck-pond adjoining the house, which was covered with weeds; but no weed was found in the stomach of the child, although a quantity of water was there present. In April 1854, a case occurred in London, in which a woman was charged with causing the death of a child by drowning it. The child was found dead, with its face in a basin of dirty water. The prisoner had placed the child in this position, and had then locked the door. The death of a child under these singular circumstances is, however, quite compatible with *accident*. The late Mr. Tubbs communicated to me the following case, which fell under his notice in April 1848. He was called to see a child, æt. 18 months, which was stated to be dying. On his arrival at the cottage he found it dead: the skin was cold, and the countenance calm and pale, with the exception of a livid discoloration in the centre of each cheek. The eyelids, as well as the mouth, were half open. The pupils were largely dilated. A frothy mucus, tinged with blood, was escaping from the mouth and nostrils. The tongue was swollen, and protruded forwards. The mother of the infant, a respectable woman, gave the following account:—She was washing in one room, while the child was in an adjoining room, the door between the rooms being kept open by a pail half full of water. She went out of the house for about two minutes, and on her return she found the child with its head downwards in the pail of water, the heels and part of the body hanging over the side of the pail. She snatched it out and tried to revive it, but without effect. There was no reason to doubt the truth of her statement, and at the inquest the jury returned a verdict of accidental death. The helplessness of an infant at this age, and the rapidity with which the insensibility of asphyxia supervenes, sufficiently account for death under these circumstances. It is, however, difficult to understand how an adult could be thus accidentally drowned. The case of Mr. *Gibbs*, a city merchant, is in this respect of some interest. In October 1864 this gentleman was found dead in a water-cistern of his house. He was partly dressed; his head was downwards in the water, and his feet rested on the edge of the cistern. It was supposed that in reaching forward to the tap, he had lost his balance and fell with his head foremost into the water, and was thus unable to extricate himself. The facts seemed to point to accident. A case occurred in London, in 1841, in which a drunken man was drowned by falling on the bank of the Surrey Canal, with his head partly in the water, while the greater part of his body lay on the bank out of the water. It was by partial immersion that the Italian boy, *Carlo Ferrari*, was destroyed many years since, by *Bishop* and *Williams*, who afterwards attempted to sell the body for the purposes of dissection. The murderers first intoxicated the deceased, and then suspended his body by the heels in a well, so that his mouth was but a few inches below the level of the water. A medical man, therefore, must not allow himself to be deceived respecting the cause of death on finding that the *whole* of the body has not been immersed, or that the clothes are not wet. In this form of murder, when the inspection is recent, the hair of the head will present the appearance of wetness, and some water, with or without weeds or other foreign matters, may be found in the ear-passages, nostrils, throat, and lungs.

Ligatures on the hands and feet.—When a drowned body is removed from water with the hands and feet bound by cords, it is usually considered that we have therein strong presumptive evidence of homicide; but numerous cases are recorded in which suicides have actually bound themselves in this manner before throwing themselves into water, probably for the express purpose of preventing any chance of their escaping death. In July 1832 the body of a full-grown man was removed from the Seine, his neck, legs, and hands being secured together

by a cord furnished with a slip-knot. There was no doubt that he had died from drowning, and that the act was one of deliberate suicide, the cord being so placed on his body that a person could have easily placed it on himself. In this case there was no great degree of ecchymosis produced by the cord, and it was not probable that there should have been when it was arranged by a suicide, since his object would be merely that of rendering himself helpless by securing his arms and legs. This he would doubtless accomplish without giving himself much pain. A case somewhat similar was the subject of an inquest at Richmond in July 1870. The hands and legs of the deceased were found tied. Round the wrists there was a slip-knot by which the cord could be drawn tightly. The legs were also tied in front. The circumstantial evidence clearly proved that this was an act of suicide. If the marks bear the evidence of violent constriction, especially on *both wrists* or on the fore-part of the neck, the presumption of murder becomes strong. In a case of this kind it would be obviously of great importance to determine whether the deceased had really died from drowning or not; since, if his death had not been caused by drowning, the fact of his body so bound, being discovered in water, would furnish the strongest possible evidence of murder. ('Ann. d'Hyg.' 1833, 1, 207.)

Weights attached to the body.—If a body is taken out of water with heavy weights attached to it, the question of *accident*, as in the former case, is done away with. It must be either homicide or suicide, and doubtless many would be apt to suspect that it was a case of murder. Several instances have, however, occurred in which persons have committed suicide by drowning, and heavy weights have been found attached on their feet and hands, or in or about the dress.

HANGING.

CHAPTER 54.

CAUSE OF DEATH—DEATH FROM THE SECONDARY EFFECTS—APPEARANCES AFTER DEATH—MARK OF THE CORD OR LIGATURE—UNECCHYMOSED MARKS—WAS DEATH CAUSED BY HANGING?—HANGING AFTER DEATH—SUMMARY OF MEDICAL EVIDENCE—MARKS OF VIOLENCE ON THE HANGED—WAS THE HANGING THE RESULT OF ACCIDENT SUICIDE OR HOMICIDE?—HOMICIDAL HANGING—INFERENCES FROM THE POSITION OF THE BODY.

Cause of death. Asphyxia.—By hanging we are to understand that kind of death in which the body is wholly or partially suspended by the neck, and the constricting force is the weight of the body itself, while in strangulation the constricting force is due to some other cause. In both cases death commonly results from *asphyxia*, although this must depend in a great measure upon the position of the ligature on the neck, as well as on the degree of pressure produced. If the cord is loose, or applied to the upper part of the neck, a small quantity of air may still reach the lungs, and then the cerebral circulation may become interrupted by the compression of the great vessels of the neck. In this case apoplexy of the congestive kind is induced, and operates as the immediate cause of death. It is easy to conceive that there may be a mixed condition of asphyxia and apoplexy, and according to the observations of Professors Casper and Remer this is actually met with in a great number of instances. The following table represents the results at which they have arrived from the examination of a large number of cases:—

	Remer.	Casper.
Apoplexy	9	9
Asphyxia	6	14
Mixed conditions	68	62
Total	83	85

It has been observed in the execution of criminals, that death takes place at different intervals of time after suspension. This difference is probably dependent on the greater or less degree of constriction produced by the ligature. If the rope should press upon the larynx or above this organ, the closure of the air-passages will not be so complete as if it pressed upon the windpipe immediately below the cricoid cartilage. A slight degree of respiration might in the former case continue for a short interval, by which the life of a person would be prolonged, while in the latter death would be immediate. If the windpipe is in part ossified, the pressure of the ligature is less perfect, and death will then take place more slowly. It has been supposed that the immediate cause of the stoppage of respiration was a pressure produced on the nerves of the neck; but it is highly improbable that, under the circumstances in which hanging generally takes place, the cord or ligature should exert any pressure on the nerves sufficient to produce death. In the greater number of cases of suicidal hanging, which are commonly unattended with much violence, the pressure on the nerves cannot obviously exist; and in violent hanging, the projection of the fore-part of the neck must suffice to prevent these slender nervous filaments from becoming exposed to such a degree of compression as directly to impede the exercise of their functions.

There is an occasional cause of death in hanging, which appears to have been first noticed by Louis. Having remarked that in some public executions death sometimes took place rapidly, and in other cases slowly, he was led to inquire into the circumstances. He found that in the cases of rapid death, the executioner was in the habit of giving a violent rotatory motion to the body of the criminal at the moment it was turned off, whereby a displacement of the toothlike process of the second vertebra of the neck took place, so that the spinal marrow was suddenly compressed. This cause of death must be extremely rare; as a general rule it is only likely to be observed in corpulent or heavy bodies, when a long fall is given to the cord, and when much violence has been at the same time employed by the executioner. It is seldom met with in persons criminally executed;—and in cases of suicidal hanging it is so unusual, that Devergie found the ligaments between the first and second vertebræ of the neck ruptured only once in fifty-two cases. M. de la Fosse considers, from the observations which he has made on this subject, that in violent hanging the process of the second vertebra is much more likely to be fractured than to become displaced, and he found this in the case of an executed criminal. On an examination of the body, he discovered that the two first vertebræ of the neck had been completely separated from the remainder of the spinal column by the rupture of the intervertebral substance, and that they were firmly attached by their ligaments to the occipital bone. The process and body of the second vertebra were detached from the bony ring, but were still connected as usual with the first vertebra. The spinal marrow had been compressed by the fractured portions of the vertebræ. Probably further observations may show that the injury to the spine is not always of the same nature, and that fractures of the vertebræ are really more frequent than simple displacement of the toothlike process. In the meantime, we must admit that such severe injuries may occur in hanging, and that when they do occur death must be sudden. But death may proceed from mere effusion of blood on the spinal membranes (sheath),

thereby giving rise to fatal compression. This is likely to happen when the head falls, or is bent suddenly backwards, so that the weight of the body is supported on the back of the neck. See a case of this kind by Mr. Campbell de Morgan (*post*, p. 53).

Rapidity of death.—Death from hanging appears to take place very rapidly, and without causing any suffering to the person. It is observed, that in those who are criminally executed there are often violent convulsions of the limbs and trunk. There is no reason, however, to believe that the individual suffers pain, any more than in the convulsions of an epileptic fit. On recovery there is an entire loss of consciousness of pain in both cases. The circulation of dark-coloured blood through the brain and spinal cord may account for these effects. Efforts to inspire are made for from one to two minutes after the closure or compression of the windpipe. The diaphragm and intercostal muscles act spasmodically, but no air enters the lungs; and it is probable that, in the act of hanging, part of the air contained in the organs is convulsively expelled. When the suspension of the body has only continued a few minutes, it has often been found impossible to restore life; and indeed the period at which resuscitation may take place will vary in different subjects according to circumstances. Supposing the hanging to be unattended with violence to parts about the neck, it is possible that some persons might be resuscitated after five minutes' suspension or longer. Others, again, may not be recovered when they are cut down immediately after suspension—a fact which depends probably on the different degrees to which asphyxia or apoplexy has extended.

Death from the secondary effects.—It by no means follows that, because we have succeeded in restoring the respiratory process, a person is safe. Death often takes place by a fatal relapse at various periods after the accident. A case of this description has been published by Sir B. Brodie. A boy, æt. 17, was found hanging. When cut down he was insensible, his face livid; his lips were of a dark-purple colour, pulse not perceptible, pupils dilated and motionless. Artificial respiration was used, and in a quarter of an hour the diaphragm began to act. He breathed at irregular intervals with stertor, and with a rattling noise in the throat. The pulse became perceptible but often flagging, and the surface of the body was cold. The countenance was still livid, but the pulse and breathing had improved. At the end of another hour an attempt was unsuccessfully made to take some blood from the arm, and the patient was placed in a warm bath. The breathing was stertorous through the night, and in the morning twelve ounces of blood were taken from the arm; but there was no relief. He continued insensible, and cold on the surface: there was frothing at the mouth, and he died twenty-four hours after he was cut down. The body was carefully examined. The vessels of the brain were very full of blood: this was the only morbid appearance.

In another instance, a labouring man who had hanged himself, was cut down in a state of insensibility. He lay for a considerable time breathing with apoplectic stertor, but eventually recovered. ('Lectures on Pathology,' 72.) Dr. Shearman reported in the 'Lancet' (Jan. 6, 1844) a case in which a powerful athletic man, who had been committed to prison for theft, hanged himself. He was found, apparently dead, hanging by his own handkerchief. He was cut down, and seen by Dr. S. half-an-hour after the occurrence. The man was then apparently lifeless; he neither breathed nor moved, nor had any perceptible circulation. The face and neck were much swollen and livid, and the ecchymosed mark of the cord was immediately below the thyroid cartilage: the fingers were bent, and the hands nearly clenched. His head was raised; the windows were thrown open, and blood was abstracted from the arm, which was put into hot water in order to increase the flow. In a few minutes the man began to breathe: *the bleeding was allowed* to continue until the pulse

was felt at the wrist, and the pupils contracted completely on the application of a lighted candle. The breathing was stertorous. A mixture of brandy-and-water was injected into the stomach, and warmth was applied to the extremities. In the course of a few hours he rallied; his pulse became firmer and quicker (130), but his head was hot; he was restless, unmanageable, and violently convulsed in the arms and legs. Shortly before death he was calm, and spoke several times: he suddenly became exhausted, and died nineteen hours after he was found hanging. This was probably a mixed case of asphyxia and congestive apoplexy. The medical treatment appears to have been proper. The unsuccessful result may perhaps be ascribed to the injury sustained by the cerebral circulation from constriction of the neck. In hanging as well as in drowning, therefore, a person may in the first instance recover, but subsequently die in spite of the best medical treatment, probably from the depressing effects produced on the nervous and muscular systems by the circulation of dark-coloured blood. A case in illustration of this point has been reported by Dr. B. W. Richardson ('Med. Times and Gaz.' Dec. 17, 1853, p. 639). A man died on the second day after he was cut down. On inspection, the brain was found greatly congested, and there was effusion of serum under the arachnoid membrane. The lungs and heart were congested, and a solid fibrinous deposit was found in the right ventricle.

Treatment.—Exposure to a fresh current of air, cold affusion when the skin is warm, with the vapour of ammonia and other stimuli, may be employed on these occasions. If there should be much cerebral congestion on recovery, bleeding may be resorted to. The application of electricity or electro-magnetism in the course of the spine might be attended with benefit; but much will depend, as in drowning, upon the time at which assistance is rendered after the body has been cut down. The following case of recovery—in which, however, asphyxia was not complete—was reported in the 'Lancet,' Nov. 1839. A robust woman, aged thirty-three, hanged herself while slightly intoxicated. She was missed about ten minutes before she was found suspended to a bedstead, but how long she had been thus hanging it was impossible to determine. Medical assistance was rendered to her in about ten minutes after she had been cut down. She was then quite insensible,—her respiration slow and laborious, and her pulse barely perceptible. The countenance was pale; there was no lividity; the lower jaw was depressed, the extremities were moderately warm, and the hands convulsively clenched; the pupils were somewhat dilated, and barely susceptible of the stimulus of light. A dusky-red mark, of a quarter of an inch in breadth, was distinctly observed encircling the upper part of the neck, forming an angle over the ramus of the jaw on the right side, where the knot of the ligature (a silk handkerchief) had rested; and in consequence of this the constriction was incomplete. The patient was twice copiously bled; mustard-poultices were applied to the calves of the legs, hot water to the feet, and cold applications to the head. After thirty-two ounces of blood had been abstracted, in half-an-hour the breathing became stertorous, the pupils fully dilated, the lower jaw fell further, the sphincters became relaxed, and the patient appeared to be rapidly sinking. Ammoniacal liniment was rubbed on the chest, and the woman so far recovered in an hour as to be able to swallow; but although she was conscious of pain, she remained comatose until the evening, when she became perfectly sensible of surrounding objects. This was evidently a case of imperfect suspension, where, from respiration still continuing, there was every hope of recovery. The cerebral circulation had here become simply disordered.

In a case, which occurred to Mr. Noyce, *cold affusion* speedily resuscitated the person. A man had been hanging about two or three minutes when he was cut down, and in four or five minutes afterwards he was seen by Mr.

Noyce. He had then ceased to breathe: his features were pallid, and the eyes injected with blood. The heart's action continued, although feebly; the pulse being about 80 and very weak. Artificial respiration was tried without any benefit, when affusion of cold water was resorted to. This, after a short time, led to the complete establishment of respiration: at each affusion there was a deep inspiration. The man was bled to sixteen ounces, and he soon recovered his consciousness. ('Med. Gaz.' vol. 37, p. 75.)

When great cerebral congestion is produced by a close constriction of the throat, copious bleeding will generally be found beneficial. Dr. Chevers mentions a case in which some Thugs, quite unintentionally, saved the life of a person whom they had strangled, by cutting his throat. A man travelling through Tirhoot fell in with a gang of Thugs, who strangled him. He became unconscious: on recovering his senses he found that his throat had been cut, and that a fellow-traveller lay strangled to death by his side. The wound in the throat was properly treated, and the man recovered in six weeks. He was able to give a description of the gang, which subsequently led to the apprehension of four, who were sentenced to death. As Dr. Chevers remarks, it can scarely be doubted that the violent measure of cutting the man's throat effectually relieved the vessels of the brain of any undue congestion which the throttling might have produced. ('Med. Jur. for India,' p. 405.)

These cases bear out the views long since published by the late Sir B. Brodie —namely, that after respiration has ceased, the heart continues to act, and to circulate dark-coloured blood, for a period of three or four minutes, to the brain and other parts of the system. The exact period of time will, however, depend on the strength of the person. It is on this ground that in hanging there is great hope of restoring a person by artificial respiration. The action of the heart was observed in one case of criminal hanging to continue for so long a period as *nine minutes and a half* after suspension. A criminal was executed for murder at Albany, U.S. The execution took place in a passage of the prison, so that the feet of the criminal were only twelve inches from the ground. The pulse was felt by a surgeon on each side. It is stated that in the fifth minute there were one hundred and twenty-eight pulsations. ('Med. Times and Gazette,' July 1, 1854.) In the after-treatment it is advisable that blood should be only sparingly abstracted to relieve any cerebral congestion, because the vital powers are much reduced under the circumstances. Convulsions and even paralysis, have been observed to precede recovery in experiments on animals.

Period at which death takes place.—We learn from those who have been resuscitated, as well as from experiments performed by persons upon themselves, that the insensibility of asphyxia comes on in the most insidious manner in death from hanging, and that a slight constriction of the windpipe will speedily produce loss of consciousness and muscular power. ('Devergie,' 2, 370.) The only symptoms of which the hanged persons have been conscious were a ringing in the ears, a flash of light before the eyes, then darkness and oblivion. The only useful inference, in a medico-legal view, which can be drawn from observations of this kind is, that asphyxia is not only rapidly induced, but that it supervenes under circumstances where it would not be generally expected to occur—*i.e.* when the body is in great part supported. M. Fleischmann found that a cord might be placed round his neck between the chin and os hyoides, and tightened either laterally or posteriorly without perceptibly interrupting respiration; but while the respiratory process was thus carried on, his face became red, his eyes prominent, and his head felt hot. These symptoms were followed by a sense of weight, a feeling of incipient stupefaction, and a hissing noise in the ears. On the occurrence of this last symptom, the experiment, he says, should be *discontinued, or the* consequences may be serious! His

first experiment on himself lasted two minutes; but in the second, owing to the cord by its pressure more completely interrupting respiration, the noise in the ears appeared in *half a minute*. When the pressure was applied on the windpipe the effect was *instantaneous*, but when on the cricoid cartilage it was not immediate. If it was applied between the os hyoides and the thyroid cartilage, or on the os hyoides itself, the period during which a person could breathe was extremely short; and this result was more striking when the act of expiration was performed at the moment of applying the pressure. The death of *Scott*, the American diver, in January 1840, shows how readily asphyxia may be induced by a slight compression of the throat, even when a person might be supposed to have both the knowledge and the power to save himself. This man was in the habit of making public experiments on hanging, and had frequently before gone through them without danger; but on this occasion, it is probable that a slight shifting of the ligature from under the jawbone caused so much compression on the throat between the chin and larynx as speedily to produce asphyxia. No attempt was made to save him until it was too late, and he was not brought to a hospital until thirty-three minutes had elapsed. He was allowed to hang *thirteen minutes*—the spectators thinking that the deceased was only prolonging the experiment for their gratification. This case proves that, for a person to die by hanging, it is not necessary that the rope or ligature should completely encircle the neck. Cerebral congestion may take place under these circumstances, and thus lead to the suspension of respiration. (See a paper by M. Toulmouche, 'Ann. D'Hyg.' 1858, 1, 177.) The slipping of the ligature, or the means of suspension, behind the angles of the jaw, might suffice to compress the great blood-vessels of the neck, and thus bring on fatal apoplexy.

The very insidious and painless manner in which a person who is suspended passes from life to death, is also well illustrated in the report of the case of *Hornshaw*, published by Dr. Chowne. ('Lancet,' April 17, 1847, p. 404.) This man was on three occasions resuscitated from hanging—a feat which, like Scott, he had performed in London for public gratification. He stated that he lost his senses almost at once; that it seemed as if he could not get his breath, and that some great weight was attached to his feet; he felt that he could not move his hands or legs to save himself, and that the power of thinking was gone. It is not improbable that many persons have thus lost their lives by privately attempting these experiments, and their cases have been wrongly set down to acts of suicide. There is reason to believe that boys have thus frequently but unintentionally destroyed themselves, from a strange principle of imitation or curiosity. The following is one among many instances of this kind. In August 1844, a boy, aged fourteen, witnessed an execution at Nottingham, and he was afterwards heard to say that he should like to know how hanging felt. On the same afternoon he was found suspended by a cord from a tree, quite dead; and from the circumstances there could be no doubt that he had been experimenting on the theory and practice of hanging, and that he did not intend to destroy himself. The jury returned a verdict of 'accidental hanging.'

POST-MORTEM APPEARANCES.

The *external* appearances met with in the hanged have been generally taken by medico-legal writers from those seen in the bodies of persons who have been criminally executed, or who have been violently hanged. Thus among them are the following:—Lividity and swelling of the face, especially of the ears and lips, which appear distorted: the eyelids are swollen, and of a bluish colour; the eyes red, projecting forwards, and sometimes partially forced out of their cavities; the pupils dilated, the tongue enlarged, livid, and either com-

pressed between the teeth or sometimes protruded: the lower jaw is retracted, and a bloody froth or frothy mucus sometimes escapes from the lips and nostrils. There is a deep and ecchymosed impression or mark around the neck, indicating the course of the cord, the skin being occasionally excoriated; laceration of the muscles and ligaments in the hyoideal region; laceration, fracture, or contusion of the larynx, or of the upper part of the windpipe. There are also, commonly, circumscribed patches of ecchymosis varying in extent, about the upper part of the body and the upper and lower limbs, with a deep livid discoloration of the hands; the fingers are generally much contracted or firmly clenched, and the hands and nails, as well as the ears, are livid; the urine and fæces are sometimes involuntarily expelled at the moment of death. Such appearances will rarely be found in those cases of suicidal hanging which are likely to come before a medical practitioner. In these, the face is generally pale, and the mark on the neck is a simple depression in the skin, usually without ecchymosis, and acquiring a horny or parchment colour only after some time. Esquirol found, in one instance, that when the body was examined immediately after death, the face was not livid; but it first began to assume a violet hue in eight or ten hours. He thought that when the cord was left round the neck the face would be livid, but if removed immediately after suspension, pale. This view is not, however, borne out by observation. The *tongue* is not always protruded. Devergie found that there was protrusion of this organ in eleven cases out of twenty-seven. This protrusion was formerly supposed to depend upon the position of the ligature: thus, it was said, when this was below the cricoid cartilage, the whole of the larynx was drawn upwards, and the tongue carried forwards with it, while when above the os hyoides the tongue was drawn backwards. The protrusion or non-protrusion of the tongue does not depend upon any mechanical effect of this kind, but simply upon congestion; for it is occasionally met with thus protruding in cases of drowning and suffocation. Besides, the protrusion has not been found to have any direct relation to the position of the ligature.

There is another appearance on which a remark may be made—namely, the state of the *hands*. As a general rule, in violent hanging or strangulation the hands are clenched. This appearance may not always be found, as it may exist and be destroyed before the body undergoes medical inspection. When the constriction of the neck has been produced suddenly, and with great violence, we may expect to meet with it. Thus it is found in the cases of executed criminals, and in strangulation attended with great violence (see case by Mr. Rake, *post*, p. 57), whether the act be due to homicide or suicide. In cases in which the constriction is gradually produced, the clenched state of the hands may not be found. (Cases by Mr. Becke, *post*, p. 57.) Convulsions generally attend violent hanging or strangulation. The influence of these on the attitude or dress may not be apparent, unless the body be sitting or lying.

Internally, we meet with the appearances described under the head of asphyxia—*i. e.*, engorgement of the lungs and venous system generally with dark-coloured fluid blood: the lungs otherwise present no particular appearances. In one instance these organs were found quite collapsed, and occupying only the back part of the cavity of the chest. The right side of the heart, and the great vessels connected with it, are commonly distended with blood. But when the inspection has been delayed for several days, this distension may not be observed. The mucous membrane of the windpipe is more or less congested, and is sometimes covered with a fine bloody mucous froth. This may be owing to imperfectly obstructed respiration, and to spasmodic efforts at breathing. The vessels of the brain are generally found congested; and in some rare instances, it is said, extravasation of blood has been met with on the membranes or in the *substance of the organ*. Effusion of blood is, however,

so rare that Remer found this appearance described only once among one hundred and one cases; and in one hundred and six cases recorded by Casper it was not found in a single instance. In one case of death from hanging, Sir B. Brodie found a large effusion of blood in the substance of the brain, and he refers to another case in which there was a considerable effusion between the membranes. ('Lectures on Pathology,' p. 58.) The venous congestion of the cerebral vessels is, however, rarely greater than in other cases of asphyxia, and is probably dependent on the degree in which the lungs have become engorged. In most instances there is increased redness of the substance of the brain, so that, on making a section of the hemispheres, a greater number of bloody points (puncta cruenta) than usual will appear. The kidneys have been found much congested. A more important circumstance has been noticed by Dr. Yelloly—namely, that in examining the stomachs of five criminals who had been hanged, he found great congestion in all, while there was blood coagulated upon the mucous membrane in two. Such an appearance might, it is obvious, be attributed in a suspicious case to the action of some irritant substance. (See 'Ann. d'Hyg.' 1830, p. 166; 1835, p. 208; 1838, p. 471.) In the case of *Good*, who was executed for murder some years since, the stomach was found on inspection to present over its whole surface a well-marked redness, resembling the effect produced by an irritant poison. The redness was especially observed at the pyloric end, where it assumed a somewhat striated character. A drawing representing the appearance of the interior of the stomach is preserved in the Museum collection of Guy's Hospital. In a case examined by Mr. Stuart, of Azimghur, in 1854, the stomach and intestines, especially the inner coat of the former, were much congested and inflamed, as if the man had died from poisoning. The contents of the stomach were analysed, but no poison found. Dr. Chevers, who quotes this case, states that he has more than once verified Dr. Yelloly's observation, and has found the mucous membrane of the stomach much congested in death from hanging. ('Medical Jurisprudence for India,' p. 397.)

Mark of the cord or ligature.—The most striking external appearance, however, is the *mark* produced on the neck by the ligature. The skin is commonly depressed, and sometimes ecchymosed, but rarely throughout its whole extent; it is frequently free from all traces of discoloration as the result of ecchymosis, the skin in the depression being then hard, brown, or of a *parchment colour* and consistency; or there may be only a thin line of blue or livid colour in the upper or lower border of the depression, and chiefly in front. The course of the mark is generally oblique, being lower in the fore-part than behind, and it is often interrupted. If the noose should happen to be in front the mark may be circular, the lower jaw preventing the ligature from rising upwards in the same degree before as it commonly does behind. The mark is generally single, but we may meet with it double, as when the ligature has been formed into two circles or loops previously to its application. Its other characters will depend upon the nature of the ligature employed. Thus a large and wide ligature rarely produces ecchymosis—the mark is wide and superficial; but a small ligature produces a narrow and deep depression, sometimes accompanied with laceration of the cuticle and effusion beneath the skin. From the statistical returns of Devergie and Casper, it would appear that a cord or rope was employed in more than one-half of all the cases of hanging which they collected; in other instances various articles of dress were found to have been employed.

Medical jurists have considered it proper to inquire into the position of the cord or ligature, as this may sometimes form a question in cases of suspected murder by hanging. The following table will show that in more than two-

thirds of all cases of *suicidal* hanging, the ligature is found encircling the neck between the chin and os hyoides:—

	Remer.	Devergie.	Casper.
Above the larynx	38	20	59
On the larynx	7	7	9
Below the larynx	2	1	0
	47	28	68

The ligature or cord should always be examined for blood, hair, or other suspicious substances.

Unecchymosed marks or depressions.—It was formerly believed that the impression produced by the cord was invariably discoloured from effusion of blood or ecchymosed, but more correct observation has shown that this condition is an exception to the general rule. When ecchymosis does exist, it is commonly superficial and of slight extent. There is rarely, if ever, effusion of blood in the cellular tissue. Dr. Riecke, of Stuttgard, in his observations on hanging, found only once in thirty cases an effusion of blood beneath and on both sides of the depression produced by the ligature. The tongue was generally between the teeth, and in most cases wounded by them. He attributed death to stretching of the spinal marrow. (Hencke's 'Zeitschrift,' 1840, 27 Erg. H. 332.) In the bodies of persons who have been criminally executed it is not unusual to find ecchymosis, but even here it is not always present. In a case which I had an opportunity of examining some years since, there was only a slight trace of ecchymosis in one spot where the knot in the cord had produced contusion. That it should occur in criminal executions is not surprising, considering the violence employed on these occasions, but it has been somewhat too hastily assumed that the appearances found in executed criminals are met with in all cases of death from hanging. Dr. Croker King, in examining the neck of an executed criminal, did not discover the smallest effusion of blood in the course of the cord, although in this case the body had been allowed to fall from a height of seven feet and a half, with a fearful jerk. ('Dublin Quarterly Journal,' No. 35, August 1854, p. 86; and 'Cases of Ruptured Intestines,' 1855, p. 12.) The theory of the production of ecchymosis has been carried so far that a *livid mark* in the course of the cord has been pronounced to be the best criterion for distinguishing hanging in the living from hanging in the dead body! It will be seen, however, that no reliance can be placed on this statement. In fifteen cases examined by M. Klein, in twelve examined by M. Esquirol, and in twenty-five cases of suicidal hanging which occurred to M. Devergie (Op. cit. vol. 2, p. 394), there was no ecchymosis whatever in the course of the ligature. ('Annales d'Hyg.' 1832, p. 413; 1842, p. 146.) Out of six cases Fleischmann met with only one instance. In three cases of suicidal hanging which I have had an opportunity of examining, no ecchymosis had been produced by the ligature. In all these instances the skin, instead of being blue or livid, or presenting an effusion of blood in the cellular tissue beneath, was hard and of a yellow colour, resembling parchment. It had that appearance which the cutis commonly assumes when the cuticle has been removed from it two or three days; and, on dissecting it off, the cellular membrane beneath often appears condensed and of a silvery whiteness. Dr. Chevers states that in cases of death from hanging he has not met with any ecchymosis in the skin along the course of the mark. (Op. cit. p. 406.) In some instances the mark, instead of being livid or brown, has presented itself simply as a white depression. This has been chiefly observed in fat subjects. The observations of Casper on this point are as follows:—Out of seventy-*one cases there* was no ecchymosis produced by the

cord in fifty, and thus in two-thirds of all the cases examined it was entirely absent. He also found that there was no difference in the appearance whether the ligature was removed sooner or later after death. Remer, on the other hand, considers ecchymosis or a livid mark in the course of the cord, to be a frequent appearance in hanging, but Devergie properly objects to the inference which he has drawn from the facts which he quotes. (Op. cit. vol. 2, p. 397.) Dr. Neyding, of Moscow, who examined fifty cases of death from hanging in the course of four years, has published his observations on the special characters of the mark produced by the cord, in Horn's 'Vierteljahrsschrift' for 1870, 1, 341. His conclusions are, that it is rare to find ecchymoses in the mark on the neck. They are more frequently found in death from strangulation. The dryness and hardness of the mark depend chiefly on the abrasion of the skin. Microscopical congestions or minute extravasations of blood are, however met with in the greater number of cases in the skin and cellular membrane in the course of the mark. These ecchymoses, in the opinion of the writer, will enable a medical jurist to say whether the hanging has taken place during life or after death; but his conclusions cannot be relied on as correct. Dr. Brenner has shown that the production of these microscopical ecchymoses depends on a variety of accidental circumstances, and they cannot aid in the solution of the question of hanging during life or after death. (See the same journal, 1870, 2, 246.)

The following singular case, which occurred to Dr. Hinze, of Waldenburg, will show that the presence of lividity or ecchymosis in the mark does not depend, as Esquirol supposed, on the ligature being left around the neck. A young man, in a fit of drunkenness, hanged himself with a stout cord. In about half-an-hour afterwards he was cut down, and attempts were made to resuscitate him. It was perceived that the cord had merely produced a superficial impression on the neck, destitute of any appearance of ecchymosis. Signs of returning life began to manifest themselves: the attempts at resuscitation were continued for several hours, but all signs of vital reaction disappeared; and now, when life was about to become again extinct, to the astonishment of those present, the mark on the neck, which had been hitherto colourless, became deeply ecchymosed. On an inspection being made the next day, it was found that this ecchymosis continued, and that it was owing to a real subcutaneous effusion. From the appearances in the head, it was concluded that the deceased had died from congestive apoplexy. The late Professor Casper regards the mark produced by the cord in hanging as a cadaveric appearance, and that it may become livid or dark-coloured after death, just as lividity appears in the dead body during the act of cooling. ('Klinische Novellen,' 1863, p. 493.) This is probably the explanation of the observation above made by Dr. Hinze, but at the same time it cannot apply to those cases in which, as by a blow, the small vessels in the skin are ruptured from a sudden fall, the rope acting by the weight of the body. In such a case ecchymosis, arising from the effusion of blood in the course of the cord, must depend on the same causes as ecchymosis from blows in the living body.

Injuries to the muscles and deep-seated parts of the neck are, of course, only likely to be seen when considerable violence has been used in hanging. In one or two instances the lining membrane of the common carotid artery has been found lacerated. Congestion and swelling of the genital organs in both sexes have been set down among the common consequences of hanging, but many observers have not met with these conditions; and it is doubtful whether, unless the body is examined speedily after suspension, any marked difference would be discovered. A more common sign, perhaps, is the discharge of the spermatic secretion in the male, by a spasmodic action, at the moment at which death takes place. It appears to me that no reliance can be

placed upon evidence derivable from this appearance, and yet it sufficed to give rise to a violent controversy among French medical jurists. ('Ann. d'Hyg.' 1839, 1, 169, 467; 2, 393; 1840, 2, 314.) It is, I think, clear that unless death from hanging is strongly established by other facts, neither the examination of the linen of the deceased, nor the application of the microscope to the mucous fluid found in the urethra, would be of any practical value in elucidating the question, at least to the satisfaction of an English jury. M. Donné justly considers evidence of this kind to be a piece of scientific refinement, in which, by attempting to prove too much, we prove nothing. Spermatic fluid may be found in the urethra of a person who has died suddenly, from accident or from natural causes; and Donné has ascertained that the discharge of a portion of this fluid into the urethra may even take place in a body hanged after death. He has found the fluid in some of these cases to contain living spermatozoa. ('Cours de Microscopie,' p. 303.) For some remarks on the relative frequency of these appearances by M. Brierre de Boismont, see 'Med. Gaz.' vol. 44, p. 84. The case of *Durville* is also of interest in reference to this question. ('Ann. d'Hyg.' 1855, 1, 445; and 2, 133.)

The following may be regarded as a summary of the appearances in hanging, when death has really taken place from asphyxia. The countenance is either livid or pale, the eyes are prominent, the tongue congested and occasionally protruded, the lower jaw retracted; the skin is covered with patches of cadaveric lividity, the hands are livid and clenched; an oblique mark is found on the neck, sometimes presenting traces of ecchymosis: commonly, however, the skin is only brown in colour and hardened. The larynx, windpipe, and subjacent muscles are lacerated, depressed, or discoloured. The vessels of the brain are congested, as well as those of the lungs, and the right cavities of the heart. A mucous froth tinged with blood is occasionally found in the windpipe. These appearances will of course be modified, or they may be altogether absent, when death has arisen from a disorder of the cerebral circulation, or from injury to the spinal marrow, either by effusion of blood, fracture, or displacement.

WAS DEATH CAUSED BY HANGING?

When a person is found dead and his body suspended, it may be a question whether death really took place from hanging or not. In investigating a case of this kind, it is necessary to draw a distinction between the *external* and *internal* appearances of the body. The former alone can assist us in returning an answer to this question: the internal appearances of the body can furnish only the general signs of asphyxia, and enable us to say whether any latent cause of death existed or not. The microscopical examination of the blood, as contained in the vessels above and below the seat of constriction, has failed to throw any light upon this question. (See 'Medical Gazette,' vol. 38, p. 1042.) The state of the countenance or skin, and the position of the tongue, can afford no evidence on the subject of death from hanging.

The mark of the cord.—Among the external appearances, it is chiefly to the *mark* produced by the cord on the neck that medical jurists have looked for the determination of this question. As the form, position, and other characteristics of this mark have been already described, it will now be necessary to allude to it only as furnishing evidence of life at the time of its production. It has been stated that, so far from being constantly livid or ecchymosed, this condition is, in reality, not seen in more than one-half of the cases which occur. But admitting that we find ecchymosis in the course of the ligature, are we always to infer that *it must have* been applied while the person was

living? The case which occurred to Dr. Hinze proves that the presence of active life is not necessary for the production of an ecchymosis in the mark; and from the experiments of Devergie, it would appear that if a body is hanged immediately or a short time *after death*, an ecchymosed mark may be produced on the neck by the ligature. (Op. cit. vol. 2, 408.) If a few hours were suffered to elapse, so that the body had become cold before suspension, no ecchymosis was produced by the ligature. Professor Vrolik of Amsterdam found, however, that a slightly livid mark was produced on the neck of a dead body, which had been suspended after the lapse of *an hour* from the time of death. (Casper, 'Woch,' Feb. 1838.) Hence this condition of the mark in a body found dead merely indicates, either that the deceased must have been hanged while living, or very soon after the breath had left his body. It would be for a jury to decide between these two assumptions, and to consider why, when a man had really died from any other cause, his body should have been hanged in secrecy immediately after death. (See 'Ann. d'Hyg.' 1842, 1, 134.) The circumstance that an ecchymosed mark may be produced by suspending a recently dead body bears out the statement of Merzdorff—that it would be in the highest degree difficult, if not utterly impossible, to determine medically from an inspection, whether a man had been hanged while living, or whether he had been first suffocated, and his body suspended immediately after death. In making this admission it is proper to bear in mind, that that which is difficult to a conscientious medical jurist in confining himself to medical facts, is often easily decided by a jury from these as well as the general evidence afforded to them.

Sometimes, besides ecchymosis, there are abrasions of the skin in the course of the cord, and these are known to have been produced during life by the effusion of blood which accompanies them. Devergie never met with this appearance in the dead body, even when the hanging took place immediately after death. The discovery of effused coagula in or about the spinal column would render it probable that the deceased must have been hanged while living. Such marks of violence are, however, rare in cases of hanging; and when they are found, it might be assumed that the effusion and coagulation of blood had been caused by violence offered to the neck *immediately after death*; but this assumption may be met by the question already suggested, namely, why death by hanging should be simulated in the body of a person who is alleged to have died from another cause!

With regard to the other or more common kind of mark in suicidal hanging, it can scarcely be said to furnish any evidence in relation to the question which we are here considering. The depression may be hard and brown, although it does not usually acquire this colour until some hours have elapsed after death; for it appears to depend simply upon a desiccation or drying of that portion of the skin which has been compressed or condensed by the ligature. Sometimes the upper and lower borders only of the depression present a faint line of redness or lividity; and it is worthy of remark, that when the ligature presents any knots or irregularities, those portions of skin which sustain the greatest compression are white, while those which are uncompressed are found more or less ecchymosed. It is in this manner that the form of a ligature is sometimes accurately brought out. It may be remarked of these depressions produced by the cord, that the characters which they present are the same, whether the hanging has taken place during life or soon after death: *i.e.* the appearances may be similar in the two cases.

Effects of hanging on the dead body.—The following are the results of some experiments performed by Casper:—1. The body of a man, æt. 28, was suspended, *an hour* after death, by a double cord passed round the neck above the larynx. It was cut down and examined twenty-four hours afterwards.

Between the larynx and os hyoides there were two parallel depressions, about a quarter of an inch deep, the skin having a brown colour with a slight tinge of blue, and a leathery consistency; in certain parts it was slightly excoriated. There was no effusion of blood beneath, but the muscles which had undergone compression were of a dark-purple colour, and the blood-vessels of the neck were congested. The appearance of the body was such, that any person unacquainted with the facts would have supposed, on looking at it, that the hanging had really taken place during life; there was nothing to indicate that the body had been hanged an hour after death.—2. The body of another young man was hanged an hour after death, and an examination was made the following day. The two depressions produced by the double cord were of a yellowish-brown colour, without ecchymosis: the skin appeared as if it had been burnt, and felt like parchment.—3. The body of an old man, who had died from dropsy, was hanged *two hours* after death. The impressions presented exactly the same characters as in the preceding case. ('Wochenschrift für die G. H.' January 1837.) When the hanging took place at a later period than an hour after death, there was no particular effect produced. In other experiments, Casper found that the appearances of the neck in a corpse hanged seventy-two hours after death, could not be distinguished from that presented by the body of a person who had committed suicide by hanging. ('Klinische Novellen,' 1863, p. 489.)

We learn from these experiments, as well as from those performed by other observers, that the mark which is usually seen on the neck in hanging during life (non-ecchymosed), may be also produced by a ligature applied to the neck of a subject *within two hours* or even a much longer period after death—consequently the presence of this kind of mark on the neck is no criterion whether the hanging took place during life or after death. The changes in the skin beneath the mark, are also destitute of any distinctive characters: there is the same condensation of the cellular membrane whether the hanging has occurred in the living or dead body. These changes are the simple result of a physical cause—mechanical compression.

Summary of medical evidence.—From the foregoing considerations, we draw the conclusion that there is no distinctive sign by which the hanging of a *living* person can be determined from an inspection of the dead body. All the external marks may be simulated in a *dead* body, and the internal appearances furnish no characteristic evidence whatever. Still, when the greater number of the signs enumerated are present, and there is no satisfactory cause to account for death, we have strong reason to presume that the deceased has died from hanging. We must not, however, abandon medical evidence on these occasions, merely because plausible objections may be taken to isolated portions of it. Facts may show that, however valid such objections may be in the abstract, they are wholly inapplicable in the concrete, *i.e.* to the particular case under investigation. Perhaps the greatest medical difficulties occur in reference to cases of *suicide*, owing to the slight appearances which attend this form of death; but on these occasions moral and circumstantial proofs are so generally forthcoming, that a medical inspection of the body is scarcely ever deemed necessary by a coroner. If, then, it is admitted by a medical jurist that it is not in all cases possible to distinguish hanging in the living from hanging in the dead, the admission must be considered as having reference to cases wherein persons destroy themselves, and not to cases in which they are destroyed by others. Even if a doubt were raised in any particular instance, it is more than probable that circumstantial evidence would furnish data for a decision, and thus satisfactorily make up for the want of strict medico-legal proof. If when we found a deeply ecchymosed or livid mark around the neck of a dead subject, we said, *all other circumstances* being equal, that the person

had most probably died by hanging, we should not be departing from a proper discharge of our duty; since, although it is medically possible that such a mark may, by a certain amount of skill, be produced after death, yet, as it would be only a murderer who would think of hanging up a recently dead body to simulate suicide, so it is certain that in such a case there would be some obvious indications of another kind of violent death about the person. The absence of these, and the presence of ecchymosis in the course of the cord, would, it appears to me, leave the question of hanging during life decidedly settled in the affirmative. Some caution should be used in expressing an opinion that hanging took place after death, in cases in which there is no ecchymosis in the seat of the ligature; because, while such an opinion would be generally correct, it might in some instances lead to the concealment of the real mode of death. Many facts already adduced show that numerous cases of hanging during life would be pronounced to be cases of hanging after death if the mere absence of ecchymosis in the course of the cord were taken as a criterion. The discovery of marks of violence about the person is not of itself sufficient to rebut the presumption of death from hanging on these occasions. The violence should at least be of such a nature as to account for the immediate destruction of life, or it can throw no light upon the question whether the person might not have died from hanging, in spite of the marks of maltreatment found upon the dead body.

If, in reference to a body found hanging, a medical jurist should assert that death had *not* taken place from this cause, this would be tantamount to declaring that the deceased must have been murdered—because it is difficult to suppose that any but a murderer would have any motive for hanging up a recently dead person. This hanging after death has been frequently carried out with the view of concealing the real mode of death, and of making the act appear to be one of suicide. The following case is reported by Devereux:—A woman was found suspended to a beam in a barn. Owing to the absence of the usual marks of hanging about the face and neck of the deceased, a careful examination of the body was made. In the course of the inspection, a small penetrating wound, evidently inflicted by a round instrument, was discovered on the right side of the chest, but in great part concealed by the breast on that side. On tracing the wound, it was found to pass between the fifth and sixth ribs, completely perforating the heart from the right to the left side. A considerable effusion of blood had taken place internally, which had been the cause of death. It was therefore evident, from the result of this inspection, that deceased had been killed, and her body suspended after death. (For a similar case by Prof. Vrolik, see Casper, 'Woch.' Feb. 1838.) Foderé refers to a case in which a person was found hanging under somewhat similar circumstances, and on examination it was discovered that death had been caused by the administration of poison—the body having been subsequently suspended. In one instance Devergie discovered a quantity of plaster of Paris in the stomach and intestines of a person found hanging. There are, however, cases of this kind in which some embarrassment may occasionally arise. It may be a question whether the discovery of poison in the body of a person found hanging is consistent with a previous attempt at suicide by poison. A person has even been known to hang himself after or about the time that he had swallowed a strong dose of prussic acid.

Marks of violence on the hanged.—The presence of marks of violence on the body of a hanged person is important, and it will therefore be proper for a witness to notice accurately their situation, extent, and direction. Having satisfied himself that they must have been received during life, he will have to consider the probability of their being of accidental origin or not. These marks of violence are not always to be regarded as furnishing unequivocal proofs of murder; *for it is possible that they* may have been produced by the person himself

before hanging, and not succeeding in committing suicide by these attempts, he may subsequently have resolved to accomplish his purpose by suspending himself. Let the witness duly reflect on these circumstances before he allows his opinions to implicate any suspected individual—let him consider that a hanged subject may bear the marks of a gunshot wound, his throat may be cut, his person lacerated or disfigured, and yet, before a suspicion of homicide is allowed to be entertained, it ought to be clearly shown that such injuries could not, by any probability, have been self-inflicted. The importance of observing caution in such a case will be still more manifest when there is no ecchymosis produced by the cord, and the face does not present the usual characters of hanging. (See 'Ann. d'Hyg.' 1870, 2, 226.)

Marks of violence on a hanged subject may in some cases be fairly ascribed to *accident*. If the person has precipitated himself with any violence from a chair or table in a furnished apartment, he may have fallen against articles of furniture, and thus have caused lacerations and bruises, especially on the limbs or body. The rope may have given way, and the person, in falling, have injured himself; but he may afterwards have had resolution and power enough to suspend himself again. Such an occurrence may be rare; but when the presence of these injuries is made to form the chief ground of accusation against another person, their possibly accidental origin ought not to be lost sight of by a considerate witness. The falling of the body on a hard pavement may produce accidental injuries which might be wrongly assigned to homicidal violence. In another part of this work (vol. i. p. 94) a case of suicidal hanging which occurred to Mr. Gibson has been noticed. In this case there was a copious effusion of blood from injuries *post mortem*. In death from asphyxia the blood remains fluid in the body longer than in other cases, so that accidental wounds after death may be attended with comparatively large effusions of blood. This is a condition also favoured by the general congestion of the venous system. ('Ann. d'Hyg.' 1868, 2, 218.) Severe injuries may be found on the head of the deceased, and yet these may not be inconsistent with suicidal hanging. (See case by Dr. Riembault, 'Ann. d'Hyg.' 1867, 1, 164; also 1, 460.)

If we suppose the deceased to have been hanged in a state of intoxication or stupefaction, medical evidence alone will rarely suffice to determine the question of homicide or suicide. The absence of all marks of violence from the body might actually lull suspicion. It is proper on these occasions to look to the hands of the deceased, since it is with these that a person defends himself; and, unless taken unawares, it is almost certain, if the hanging were homicidal, that there would be traces of violence on these parts. The clothes would be torn and discomposed, and the whole appearance of the deceased would be that of one who had done his utmost to resist a violent murderous attack. There might be some injuries which could not be attributed to accident under the circumstances. Among these we may enumerate fractures, dislocations, deeply penetrating incised and gunshot wounds. Now the question is —Do these serious injuries necessarily establish homicide? The answer must be in the negative; although when fractures or dislocations exist, there are strong grounds for suspicion. ('Ann. d'Hyg.' 1842, 1, 160.)

Suicides, it must be remembered, are capable of making many attempts on their lives by various means. In the spring of 1836, a gentleman was found dead, hanging in his bedroom at an inn. His dress was much disordered; and some blood, which had issued from a deep wound in the throat, was found scattered over the floor. From the facts proved there was no doubt that this had been an act of suicide, and that the deceased, previously to hanging himself, had first attempted to cut his throat. Had his body been found in an exposed situation, this wound *in the throat might* have given rise to a suspicion of murder. *A young man was found hanging* in his bedroom, quite dead.

He was suspended by his cravat, and his feet were within an inch of the floor. The door of the room was fastened on the inside, and it was proved that no one could have had access to it. An earthen pan was found near the bed, containing about a pint of blood, which appeared to have issued from a deep incision in the bend of the left arm of the deceased. The razor with which this had been inflicted was found on the mantelpiece. It came out in evidence, that on the previous night the deceased had swallowed a quantity of arsenic, and had suffered severely from the effects of the poison, although at the time it was supposed that his illness was due to other causes. In this case there were three modes by which suicide had been attempted. The deceased had first taken poison, then wounded, and afterwards hanged himself. There could be no doubt that death was caused by hanging; and had the wound been inflicted and the poison administered by other parties, this opinion of the cause of death might have been safely expressed. Had the body been found hanging in a suspicious locality, the circumstances might have created a strong presumption of murder.

The following case is reported by M. Dégranges:—A man was found hanging in a room by a cord attached to a nail in the ceiling. In the upper and fore part of his neck there was a deep wound, through which the cord had passed. A ladder was placed against the wall by the side of the body. About a pound of coagulated blood was found on the floor, as well as in different parts of the apartment, and some linen covered with blood was discovered near the body. In a table-drawer, in the apartment above, was found some cord sprinkled with blood, as if a bloody hand had been in contact with it. On the staircase between the two apartments there was no trace of blood. The deceased's apartment was secured on the inside by the door being bolted. An opinion was demanded of M. Dégranges respecting the manner in which deceased had died, and the probability of his having been murdered. The deceased's clothes where spotted with blood, and his hands were also bloody. The body externally did not present the slightest trace of any ecchymosis or other mark of violence. The hands were likewise free from violence, the fingers contracted, and the nails blue. There were patches of cadaveric lividity scattered over the trunk, and it was evident that the fæces had been discharged. The face had a slight violet tint, and the tongue, which had been forcibly compressed by the teeth, projected about an inch from the mouth. The wound in the throat was situated between the chin and os hyoides (bone of the tongue), and extended from the angle of the jaw on one side to the opposite angle. It had penetrated through the mouth to the back of the throat, but had divided only some small branches of the thyroideal artery: it had evidently been inflicted after several attempts, for its edges were irregularly cut. The cord, in passing through the wound, had lacerated and extended it at the two extremities. The vessels of the brain were filled with blood; the vertebræ of the neck were uninjured, and the stomach was free from any trace of poison. The opinion given from these data was to the effect that the deceased had died from hanging, and that he had hanged himself.

When we consider that in this case the deceased had laid open his throat, as far as the spine, dividing the right superior thyroideal artery, by which so much blood had been lost that it was not unlikely he would have soon fallen into a state of syncope, it is remarkable that he should still have had sufficient presence of mind and muscular power to have done what the evidence shows he *must* have done—namely, to have placed a handkerchief on his wound in order to arrest the bleeding; to have gone upstairs to another room, and have searched in a table-drawer for the cord with which he intended to hang himself; to have placed a ladder against a wall, and to have made use of this for the purpose of fixing a cord to a nail in the ceiling—an act which could only

be performed with great difficulty. When we duly reflect on all these circumstances, it does not appear extraordinary that the magistrate who ordered the examination should have been prepared to receive an account of the deceased having been murdered. Much, it is true, rested upon the moral and circumstantial proofs; as, for example, on the previous state of mind of the deceased, and the fact of his room having been found secured on the inside. Casper mentions a case in which a woman was found hanging in her room. On examining the body, two penetrating wounds were seen on the left side of the chest; these had perforated the pericardium, and touched the surface of the heart, without entering its cavities. There was a basin of bloody water and a bloody sponge on the table; the right hand of deceased was stained with dried blood, and the door and window were fastened on the inside. There was no doubt that this was a case of suicide, and that after inflicting the wounds the deceased had suspended herself. The mark on the neck was nowhere ecchymosed, but of a yellowish or parchment colour. There was nothing in the nature of the wound to have prevented self-suspension. ('Ger. Leich.-Oeffn.' vol. 2, p. 89. See also 'Ann. d'Hyg.' 1848, 1, 444.)

A woman committed suicide in 1868 under the following circumstances:—She fastened a cord to the top of a bed-post, put her head in a noose while kneeling on the bed, and then made a deep wound in her arm with a razor; she closed the razor and put it aside. Becoming faint from loss of blood, she must have fallen forward, and the pressure of the cord on the neck caused death.

The remarks made relative to incised wounds will apply to gunshot wounds. A suicide may attempt to destroy himself with a pistol; he may fail in the attempt, and ultimately hang himself. Any description of gunshot wound, provided it be such as to allow of a person surviving a sufficient time, may thus be found on a hanged subject, and yet constitute no proof whatever of homicide. If there are circumstances about the wound which prove that it could not have been self-inflicted, this of course will affect the conclusion; but when such circumstances are not met with, a cautious medical jurist should say, in answer to inquiries respecting the origin of these wounds, that they may have been inflicted either by the individual himself or by *another*. There might be no medical facts which would directly establish either view. In one instance of suicidal hanging there were lacerated wounds upon the head, and a handkerchief was found blocking up the mouth. (Henke's 'Zeitschrift,' 1838, 2, 257; 1839, 1, 207; also 1840, 1, 135; also 'Brit. and For. Med. Rev.' No. 24, p. 560). Of course if, in any case, the wounds or injuries are of a decidedly mortal nature, and have probably caused rapid death, the presumption of murder amounts almost to positive certainty; for who but a murderer would suspend the dead body of a person so wounded, *immediately* after death? ('Ann. d'Hyg.' 1835, 2, 410.)

Was the hanging the result of accident, homicide, or suicide?—Most medical jurists have passed over the subject of *accidental hanging*, probably believing it to be impossible. In the sense commonly implied by the term it is certainly unusual, but, although rare, it is a possible occurrence. Dr. Smith mentions a case in which a girl of the age of thirteen years was hanged by pure accident. She was swinging in a brewhouse, and near the rope used by her for that purpose was another for drawing up slaughtered sheep. In the course of the exercise, her head got through a noose of this second cord, which pulled her out of the swing, and kept her suspended at a considerable height until dead. The following case was communicated to me by one of my pupils. In December 1833 an inquest was held on the body of a boy aged ten years. It appeared in evidence that he had been playing with a child eight years old, who was the only witness of his death. The deceased had been amusing himself in swinging, by fastening a piece of plaid-gown to a loop in a cord, which

was suspended from a beam in the room. In the act of swinging he raised himself up and gave himself a turn, when the loop of rope suddenly caught him under the chin, and suspended him until life was entirely extinct. The boy who was in the room with him did not give any alarm for some time, thinking that the deceased was at play. The jury returned a verdict of 'accidentally hanged.' Another case occurred in London in 1836. A man who was in the habit of exercising himself in gymnastics on the rope, was one morning found dead and suspended in his bedroom. The rope had passed twice round his body and once round his neck, whereby it had caused death, although the legs of the deceased were resting on the floor. There was no doubt that deceased had been accidentally hanged. These are two among several instances which have come to my knowledge, and it will be seen that the circumstances under which they occurred, were sufficiently decisive of the manner in which the hanging took place. Indeed circumstantial evidence must always suffice for the discrimination of accidental hanging; and we have therefore merely to inquire whether, when the body of a person is found hanging under circumstances which do not allow of the suspicion of accident, the act has been the result of *suicide* or of *homicide*. A medical witness must remember that this is strictly a question for the jury. It is not for him to say whether a man has hanged himself or been hanged by others, but merely to state, when required, those *medical circumstances* which support or rebut one or the other presumption. The jury, under the direction of the judge, will arrive at a conclusion from the whole of the evidence.

Suicidal hanging.—Next to drowning the most common mode of self-destruction is by hanging. Suicide by hanging has been known to take place at all ages, from boyhood to old age. The discovery of a person dead from hanging is presumptive of suicide, all other circumstances being equal. The distinctive characters by which suicidal may be distinguished from homicidal hanging will be considered in the next section. According to Indian authorities, by far the greater number of those who commit suicide, destroy themselves by hanging. Dr. Beatson, of Dacca, says in his experience suicidal hanging was so frequent that any other method of self-destruction was quite exceptional. Out of seventy-five cases of suicide which fell under his notice, sixty-four were by hanging, nine by drowning, and two by cut throats or poisoning. Dr. Chevers, in his excellent work on 'Medical Jurisprudence for India,' states that the criminals of that country are well aware of the great prevalence of suicide by hanging, and after destroying their victims by blows they are in the habit of suspending the bodies in order that their deaths may be attributed to self-destruction. Confirmatory of this remark, Mr. Richards, of Bancoorah, has communicated to me two facts which show the importance of making post-mortem examinations of those whose bodies are found hanging. The first was the case of a woman whose body was found suspended. It was discovered on inspection that there was a rupture of the stomach, from which the woman had died. The body was hung up by the husband soon after death. In a second case one Kuyra Khoyen confessed to having killed his wife by a blow with his fist, and afterwards hung the body up to simulate death by suicide.

Homicidal hanging.—It has been truly observed, that of all the forms of committing murder, hanging is one of the most difficult, and it is therefore but seldom resorted to. In most cases, when a person has been hanged by others, it has been after death, in order to avert a suspicion of homicide. Hence the discovery of a body hanging affords *primâ facie* evidence of suicide, supposing it to be rendered absolutely certain that death has taken place from this cause. We must, however, admit that a man may be murdered by hanging, and that the appearances about his body will not afford the smallest evidence of the fact. The circumstances which will justify a medical jurist in making

this admission are the following:—First, when the person hanged is feeble, and the assailant a strong healthy man. Thus a child, a youth, a woman, or a person at any period of life, worn out and exhausted by disease or infirmity, may be destroyed by hanging. Secondly, when the person hanged, although usually strong and vigorous, is at the time in a state of intoxication, stupified by narcotics, or exhausted by his attempts to defend himself. Thirdly, in all cases murder may be committed by hanging when many are combined against one person. With these exceptions, then, a practitioner will be correct in deciding, in a suspected case, in favour of the presumption of suicide. Unless the person laboured under stupefaction, intoxication, or great bodily weakness, we must expect to find, in homicidal hanging, marks of violence about the body; for there are few who would allow themselves to be murdered without offering some resistance—notwithstanding the assertion of Mahon, that some might submit to this mode of death with philosophical resignation when they saw that resistance was hopeless! The following singular case of attempted murder by hanging is mentioned in 'Symes's Justiciary Reports' (Edinburgh, 1827). A woman, æt. 69, was charged with attempting to hang her husband, who was some years older. It appeared that the accused contrived to twist a small rope three times round the neck of her husband, while he was lying asleep. She then tied him up to a beam in the room, in such a manner that when the neighbours entered he was found lying at length on the floor, with his head raised about one foot above it. He was quite insensible; his hands were lying powerless by his side, his face was livid, and it was some time before he could be roused. Had he remained three minutes longer in this position, he would have died. According to his statement, he went to bed quite sober, and he was not aware of anything which had passed during the attempt to hang him or afterwards, until he was resuscitated. The prisoner was convicted of the assault without previous malice, she having no ill-will against her husband, and being herself at the time intoxicated. It can hardly be considered possible that any man should be so sound asleep as not to be awakened by the attempt thus made to hang him. The probability is that the prosecutor was, like his wife, completely intoxicated and helpless. A case of alleged murder by hanging, and of considerable difficulty in its medical relations, was tried at the Exeter Summer Assizes, 1851 (*Reg.* v. *Rowe*). Although the prisoner was acquitted, there were some strong facts leading to the belief that this could not have been an act of suicide.

Some medical jurists have thought that the *mark* left by the cord on the neck would serve as a criterion of murder on which we might depend. Thus it has been said, if the mark is circular and situated at the lower part of the neck it is an unequivocal proof of murder. In hanging, the mark of the cord is generally *oblique*, being higher at the back part of the neck, in consequence of the loop formed by it yielding more in this direction than in front. But it is an error to suppose that this want of obliquity in the impression can afford any evidence in favour of the act having been homicidal. Its form will depend in a great degree upon the fact of the body being supported or not, for it is the weight of the body which causes its obliquity; it will also depend on the manner in which the cord is adjusted. A case of suicidal hanging is related by Orfila, in which the mark of the cord extended horizontally round the neck from behind forwards. ('Méd. Lég.' tom. 2, p. 376.) The slip-knot of the cord was in front of the neck, and it is obvious that when the cord is thus adjusted by a suicide, there will be scarcely any obliquity in the depression produced by it. A circular mark is not inconsistent with death by hanging as the result of suicide. A case of this kind which created some doubt, as the person at the time was suffering from typhus fever, occurred to Dr. Frölich. It was a question, *from the course of the* mark on the neck, whether death took

place from hanging or strangulation. (Horn's 'Vierteljahrsschrift,' 1869, 2, 57.) Equally ill-founded is the assertion that the existence of *two impressions* on the neck affords positive proof of homicide. One of these impressions may be at the lower part of the neck, and circular—the other at the upper part and oblique: it is therefore contended, that the deceased must have been strangled in the first instance, and afterwards hanged. The possibility of a prior attempt being made by a suicide to strangle himself, and thus produce the mark, is not adverted to. 'Si l'on observe les deux impressions,' says Mahon, 'l'assassinat est alors parfaitement prouvé.' It is fortunate that there are facts on record to oppose to this very positive statement. One of the first cases reported by Esquirol is that of a female lunatic who committed suicide by hanging herself, and on whose neck two distinct impressions were seen—the one circular, the other oblique! These appear to have arisen from the cord having been passed twice round the neck, the body being at the same time partially supported. In some instances a presumption of homicidal interference may exist if there are two distinct impressions, but it cannot be admitted that they establish the fact of murder. Dr. Walter has reported a case of some interest in this respect. A woman was found hanging to the branch of a tree, the feet resting on the ground. There were two marks on the neck, one like that of strangling with the same ligature as that by which the body was hanging. Dr. Walter concluded that the mark produced by the suspension of the body was the result of post-mortem hanging after murder by strangulation. ('Vierteljahrsschrift,' 1867, 1, 161.) In the same journal for 1871, 2, 223, a case is reported by Dr. Maschka, of Prague, in which a boy, æt. 9, was found hanging. There were marks of pressure on the neck which at first led the examiners to draw the inference that the boy had been strangled and afterwards hanged. The reasons for this opinion were not satisfactory, and suicide was admitted to be not only possible but probable.

The injury done to the neck by the cord or ligature can rarely afford any clue to the manner in which hanging took place, unless the circumstances under which the body is found, favour the presumption of homicide or suicide. Thus the laceration of the muscles and vessels of the neck, the rupture of the windpipe and the displacement of the larynx, the stretching of the ligaments of the spine, and effusion on the sheath of the spinal marrow, may be observed in suicidal as in homicidal hanging. The presumption, however, is obviously in favour of the latter, when these violent injuries are found to be accompanied by fracture or displacement of the vertebræ of the neck, and the body of the deceased is not corpulent, the ligature by which he is suspended is not of a nature likely to produce them, and the fall of the body has not been great. As a rule, a long fall in suicidal hanging is rare. Mr. Clegg, coroner for Boston, informs me that on one occasion he held an inquest in a case of suicidal hanging, in which the deceased had fixed the rope to the top of a beam in a lofty barn, and gave himself a fall of about fifteen feet. The face of the corpse had an expression of the most horrible agony, and the tongue was protruded and bitten. Had the body been examined the muscles and bones of the neck would probably have been found much injured.

Injury to the vertebræ of the neck.—A much-disputed question has arisen in medical jurisprudence, whether the vertebræ of the neck can become fractured or displaced in *suicidal* hanging. Most medical jurists deny the possibility of this accident occurring—the displacement or fracture of these vertebræ being rarely observed, even in criminal executions, when great violence has been used by the executioner. So far as I am aware, there is no case of *suicide* on record in which such an injury to the neck has been found. A case referred to by Petit, which was left to the decision of Dr. Pfeffer, is unsatisfactory, because the body was not examined; and it is doubtful whether the act was really one of suicide or not. M. Ansiaux, of Liége, in inspecting the body of a woman

who had hanged herself, found extravasated blood behind the first two vertebræ of the neck, which were more widely separated behind than usual. On removing these vertebræ the posterior ligament of the spine was found ruptured, and the transverse ligament of the first vertebra (atlas) so stretched that the process of the second, was completely locked against the articular surface. The perpendicular and oblique ligaments were entire. The deceased was a stout healthy person; when discovered, her body was suspended from a beam the feet being about a foot and a half from the floor. She had evidently fallen with considerable force. The case of this woman will serve to show that severe injury to these deep-seated regions of the neck may be occasionally met with in suicidal hanging. A case somewhat similar to this has been reported by Mr. Campbell de Morgan. ('Lancet,' August 10, 1844.) A married woman, æt. 50, worn out and exhausted by disease, was found hanging quite lifeless from the rail of a bed, which was not more than five feet eight inches from the ground. The front of her body was turned round towards the bed, the head thrown forcibly backwards—the knot of the ligature, an old silk handkerchief, being placed in the middle of the under side of the chin. Her heels were about three inches from the ground—the knees being on a level with the bed-frame, and resting against it. The body was seen by a medical man about an hour after it was cut down. The features were perfectly calm, and there was no trace of congestion about the face: it was pale, and in all respects natural. There was no lividity; the eyes were neither injected nor prominent; the tongue was pale, lying far back in the mouth, and without any mark of indentation from the teeth. The cord-mark was well-defined, of a parchment colour, dry, brown and hard, without any ecchymosis, but with a thin line of congestion at the upper edge of the groove; it was very deep at the back of the neck, just over the first vertebra or atlas, probably owing to the head hanging backwards. The mucous membrane of the stomach was pale; the lungs natural: there was no congestion of the large veins or of the cavities of the heart—the two ventricles contained about an equal quantity of blood. These appearances show that death was not caused either by asphyxia or by cerebral congestion. Neither the windpipe nor the great vessels of the neck could have sustained any pressure or constriction. The deep muscles over the second and third vertebræ of the neck were ecchymosed; this ecchymosis extended to the sheath of the spinal marrow; and on the left side, and externally to the sheath, there was a large effusion of blood firmly coagulated. There was no displacement of the second or other vertebræ, and the ligaments were sound; but between the third and fourth vertebræ there was unusual mobility, as if they had been stretched. In this case the body was not heavy, and the fall, if any, could have been but trifling. The effusion on the spinal marrow was the cause of death; and its origin was sufficiently explained by the falling back of the head and sudden bending of the vertebræ of the neck. Her husband and family were in an adjoining room, but heard no noise: it was only by accident that the deceased was discovered.

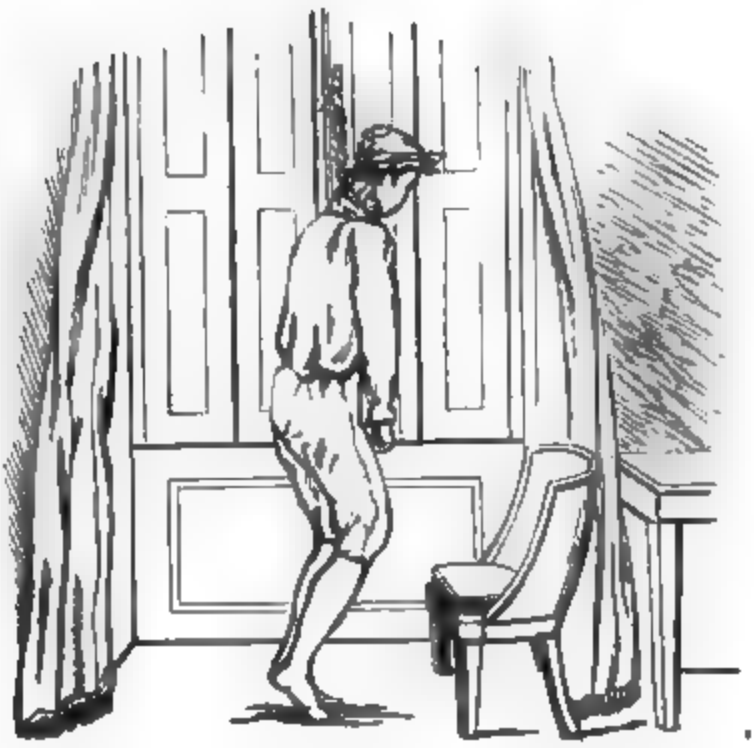
Circumstantial evidence.—In all doubtful instances we should not lose sight of moral and circumstantial evidence. We should ascertain whether the individual had been previously disposed to commit suicide or not: we should observe whether the doors and windows of the apartments had been secured on the inside or on the outside; whether the dress of the deceased is at all torn or discomposed, or his hair dishevelled; whether the attitude of the body is such as to show interference after death; whether there are marks of blood about the body, or the ligature, or in the room; whether the hands are bloody, or present marks of wounding or struggling; whether the rope or ligature corresponds to the impression seen around the neck; and lastly, whether the cord is of sufficient strength *to support the weight of the deceased.* (Case of Pinckard,

post, p. 71.) The strongest evidence of homicide is often found in the attitude and the state of the dress of the dead body: it may or may not indicate interference or change after death irreconcilable with the supposition of death from suicide or accident. On this point the minutest circumstance may become of considerable importance as medical evidence. When there are indications of violent struggling, the dress may be found disordered, unless it has been smoothed or arranged by the murderer after the death of the deceased. (See p. 72.) There may of course be no evidence of disorder or discomposure of the dress, in the case of a woman, when the body is fairly suspended. These points fall, it is true, more within the province of the officers of justice than of a medical practitioner; but the latter is generally the first who is called to see the deceased, and therefore, unless such facts were noticed by him on his visit, they might often remain altogether unknown. The medical opinion of the actual cause of death, however, must be based only on *medical* facts. But circumstantial evidence has on various occasions assisted in clearing up a doubtful case. Louis states that on removing the body of a man who was found hanging, the rope was observed to be stained with blood. This simple circumstance led to further investigation, by which it was discovered that the person had been murdered, and his body afterwards suspended. The presence of marks on the neck indicative of strangulation, such as the cord was not likely to have produced, may lead to a suspicion that the hanging followed death. In April 1829, a boy was found hanging, perfectly dead. On inspecting the body, a round ecchymosed mark, about the size of a dollar, was seen on the forepart of the neck; and near it were several impressions, as of fingers and nails, in the surrounding skin. There was neither depression nor ecchymosis in the course of the cord. The inspection left no doubt that the deceased had died from asphyxia. It was subsequently discovered that the boy had been first strangled, and afterwards hanged. In another case the body of a man was found hanging in a room; it was so suspended from a hook that the trunk was not more than nine inches from the floor, and the legs were stretched out at length. The cord was from two to three feet long, and but loosely passed round the neck. The furniture of the room was in great disorder, and some marks of dried blood were seen on one part of the floor. The right side of the head and face of the deceased presented several excoriated and ecchymosed marks. There was a circular impression around the neck produced by the cord, but it was entirely free from ecchymosis. On the left side a little above this impression, there was a strongly ecchymosed mark, which could be traced round to the back of the head. Blood was found effused beneath this mark. The lungs presented the appearances of asphyxia, but the examiners referred this to strangulation and not to hanging, considering that the body had been suspended after death in order to simulate suicide. The circumstances of the case appear to have fully justified this conclusion. (See the case of *Pinckard*, STRANGULATION, *post*, p. 72; and for another, in which some doubt existed whether the deceased had died by hanging or strangulation, see 'Eulenberg, Viertelj.' 1872, 1, 199, 216; also, 'Ann. d'Hyg.' 1867, 1, 164 and 460.)

The position of the body.—Lastly, it has been contended that the *position* of the dead body may serve to distinguish suicidal from homicidal hanging. This point was strenuously argued on the investigation which took place relative to the death of the *Prince de Condé* in 1830. This case has been elsewhere referred to (vol. 1, p. 83) in reference to the time at which death probably took place. It requires a brief notice here, as it involves two glaring errors in medical evidence on death from hanging: 1st, that a person cannot die from hanging when the body is in any way supported, and therefore that murder must have been perpetrated; 2ndly, that in all cases of death from hanging, the mark produced on the neck by the cord or ligature must be discoloured or ecchymosed.

If not ecchymosed, it is assumed that death must have taken place from some other cause, and the body have been afterwards suspended for the concealment of crime. On the 27th August 1830, the *Prince de Condé* was found dead in his bedroom, partly dressed, his body being suspended from the fastening of the window-sash by means of a linen handkerchief attached to a cravat which he was in the habit of wearing. The annexed engraving (Fig. 137) will give an idea of the position in which the body was found. The head was inclined a little to the chest, the tongue was congested and protruded from the mouth; the face was livid, a mucous discharge issued from the mouth and nostrils, the hands were clenched, the toes of both feet touched the floor of the room, the heels were elevated and the knees were partly bent forward. The point of suspension was about six-and-a-half feet from the floor. The legs were uncovered, and had some slight abrasions upon them. There was a chair near the deceased. Five medical men—three of them eminent experts, Drs. Marc, Marjolin, and Pasquier—inspected the body, and found the usual appearances indicative of death from asphyxia. There were no marks of violence about it beyond those which might have been produced accidentally by the chair in the act of hanging. There was no natural cause of death in the body, nor any appearance to indicate that there had been violent struggling or resistance on the part of the deceased. On the upper and lateral part of the neck there was a mark produced by the ligature, but no ecchymosis; and on the left side of the neck, corresponding to the knot of the cravat, there was a depression somewhat deeper. ('Ann. d'Hyg.' 1830, 1, 157.) The case involves only the ordinary details of suicidal hanging; and but that the deceased was a prince, and there was much political excitement at the time, the event would have passed unnoticed. It was contended, however, that he had been strangled by assassins, and his body afterwards hanged. The characters presented by the mark on the neck, and the erect position of the body with the feet on the floor, were the chief medical points on which those who *adopted the hypothesis of murder* rested their case. The evidence

Fig. 137.



Suicidal Hanging. Case of the Prince de Condé.

Fig. 138.

Suicidal Hanging

derivable from the mark on the neck has been elsewhere considered (p. 40); and with regard to the erect position of the body, all experience is against those who would treat this as negativing suicidal hanging. If there is any medico-legal fact really ascertained respecting asphyxia, it is that, in order that death should take place from hanging, it is not necessary that the body should be freely and perfectly suspended. In his report of the above case, Dr. Marc quotes a number of instances, and gives illustrations of death under these circumstances. In one of them (Fig. 138) a man committed suicide by hanging himself in a prison-cell. He was found quite dead, nearly in a sitting position, his heels resting on the floor and his body being only a foot and a-half above it. Fig. 139 represents a man, æt. 40, who committed suicide by suspending himself from a hook above his bed. When found he was in a kneeling position —his knees being only eight or ten inches above the bed, and his toes resting upon it. ('Ann. d'Hyg.' 1830, 1, 201.) Many cases have been since recorded in which death has taken place from hanging when the feet were in contact with the ground, or the persons were almost sitting or recumbent: these may be regarded as mixed cases of hanging and strangulation. The reports of eleven cases of suicidal hanging or strangulation which I collected within a few years, gave the following results: in three the bodies were found nearly recumbent; in four in a kneeling posture—the body being more or less supported by the legs—and in four the persons were found sitting. In one case the deceased, a prisoner, was found hanging to the iron bar of the window of his prison, which was so low that he was almost in a sitting posture. The ligature which he had employed was a cravat, but (what was more remarkable in the case) the hands of the deceased were found tied by another handkerchief. The body was warm when discovered. There was not the least doubt of this having been an act of suicide; yet, as the reporter of the case observes, had the body been found in an unfrequented spot, the discovery of the hands *tied*, if not the position, would have led to a strong suspicion of murder. In the opinion of the reporter, the deceased had contrived to tie his hands together by means of his teeth. ('Ann. d'Hyg.' 1831, 1, 196; also 'Ann. d'Hyg.' 1832, 1, 419.) Among the cases collected by Esquirol is the following:—A patient in La Charité was found one morning hanging by a rope which was attached to the head of his bed. He had fastened this by a loop round his neck, but his body was so suspended, that when discovered he was on his knees by the side of his bed. There are one or two similar instances related by the same author. Mr. Webb met with a case in which a man destroyed himself while lying at full length on a bed. His head was in a loop formed by a leathern strap fastened to the bed-post ('Med. Times and Gaz.' Aug. 7, 1852, p. 137). The following case fell within my own knowledge:—In 1832 a man was found hanging in his room, with his knees bent forwards, and his feet rest-

Fig. 139.

Suicidal Hanging.

ing upon the floor. He had evidently been dead for some time, since cadaveric rigidity had already commenced. The manner in which this person had committed suicide was as follows: he had made a slip-knot with one end of his apron (he was a working mechanic), and having placed his neck in this, he threw the other end of the apron over the top of the door, and shutting the door behind him he had succeeded in wedging it in firmly. At the same moment he had probably raised himself on tiptoe, and then allowed himself to fall; in this position he died. The weight of his body had already sufficed to drag down a part of the apron, for it seemed as if it had been very much stretched. The deceased was in the position in which the body of the Prince de Condé was found (p. 55), and the depression produced by the ligature on the neck was, as in that case, nowhere ecchymosed. These facts, so far from being considered to negative suicide, were treated as perfectly in accordance with it! Dr. Williams, of Norwich, communicated to me a similar case of suicide which occurred in September 1872:—A lady, who had been for some time suffering from great depression, was found dead hanging by a long cloth to a closed door, over the top of which she had thrown the other end of the cloth (knotted) and then shut the door upon it. (For another case by Dr. Albert see Henke's 'Zeitschrift,' 1843, 2, 50.) Casper reports an instance in which a man was charged with the murder of his wife because her body was found hanging in almost an erect position! ('Ger. Leich.-Oeffn.' vol. 2, p. 92.) Mr. Rake (a former pupil) has communicated to me the particulars of a well-marked case of suicidal hanging which occurred in August 1852, in which the person was found nearly in a sitting posture. A man, æt. 21, hanged himself by a silk handkerchief passed through a ring only twenty-six inches from the ground. Mr. Rake saw him in a few minutes after he had been cut down: the body was quite warm. When first seen, the man was lying with his legs extended at full length; the handkerchief was drawn tightly round the throat by a slip-knot, and his face was directed towards the ground. Both hands were firmly clenched. There was a well-defined, nearly circular, and much-indented mark round the lower part of the neck corresponding to the ligature. The ligature was drawn so tightly at one or two points as to appear almost buried in the folds of the skin about the neck. There was much ecchymosis at various spots in the back of the neck, and some abrasion of the skin at two or three points. There was swelling, with great congestion of the face. There was no escape of blood from the ears. (For other cases, with illustrations of the positions of the body, see a paper by M. Tardieu, 'Ann. d'Hyg.' 1870, 1, 94.)

Mr. Becke, coroner for Northampton, has furnished me with three additional cases, which occurred at the General Asylum for Lunatics in 1852. In the first, the man made a loop of a twisted blanket at a height less than five feet from the ground, and then kneeling forward strangled himself, the feet being on the ground and the knees nearly touching it. The fingers were not clenched nor contracted, but partially bent. There were no marks of any convulsive struggle except a slight bruise on the wall. In the second case the man hanged himself on a beam: the legs touched the ground—the hands were not clenched. In the third, the patient had hanged himself by mounting on a shelf in a loft, fastening his neck-handkerchief to a beam, and then swinging himself off. He was found with his right leg suspended in the air, whilst his left leg was supported by the shelf on which he had been standing. His right hand was convulsively clenched, which is said to have been a habit on the part of the deceased; the left hand was open, and the fingers only slightly bent.

Remer found that out of one hundred and one cases of suicidal hanging, in fourteen the body was either standing or kneeling, and in one instance it was in a sitting posture. Dr. Duchesne has published an account of fifty-eight

cases in which the suspension of the body was partial—the feet or trunk being more or less supported. Twenty-six of these cases are new. The reporter draws the conclusion that *suicide* by hanging is consistent with *any posture* of the body, even when resting upon the two feet. ('Ann d'Hyg.' Oct. 1845, 2, 141 and 346.) Further evidence need not be adduced to show how unfounded is that popular opinion which would attach the idea of homicidal interference to cases in which a body is loosely suspended, or in which the feet are in contact with any support. We ought rather to consider these facts as removing a suspicion of homicide; for there are probably few murderers who would suspend their victims, either living or dead, without taking care that the suspension was not partial, but complete. Besides, the facts of many of these cases are readily explicable; thus, if the ligature is formed of yielding materials, or if it is only loosely attached, it will yield to the weight of the body after death, and allow the feet to touch the floor, which they might not have done in the first instance. If there is reason to believe that the body has not altered its position after suspension, we must remember the facility with which insensibility comes on, and the rapidity with which death commonly ensues in this form of asphyxia. (See 'Med. Gaz.' vol. 44, p. 85.)

The limbs secured in suicidal hanging.—One or two points are worthy of notice in relation to this medico-legal question. The hands or legs, but more commonly the former, have been found tied in cases of undoubted suicidal hanging ('Ann. d'Hyg.' 1832, 1, 419); and yet it has been gravely debated whether it was possible for a person to tie or bind up his hands, and afterwards hang himself! It is unnecessary to examine the ingenious arguments which have been urged against the possibility of an act of this kind being performed; since, among many cases that might be quoted, two occurred in 1843, in this metropolis, where the persons died from hanging: the act was suicidal, and the hands were found tied, in both instances, with a silk handkerchief. A third case occurred at Worcester, in December 1844, in which the deceased tied his wrists with a silk handkerchief; and secured to this were two flat-irons, in order to increase the weight. A remarkable case of suicide, in which the hands and ankles were tightly secured, has been communicated to the 'Medical Gazette' by Mr. J. H. Taylor (vol. 45, p. 388; see also cases in 'Guy's Hospital Reports,' Oct. 1851). In another case of suicidal hanging, a handkerchief folded was found pressed into the mouth and nostrils. Suicides sometimes designedly arrange matters so as to create a suspicion of murder. Dr. Heinrich, of Gumbinnen, relates a remarkable fact of this kind. A woman was found hanging to the branch of a tree—the feet not touching the ground. A bundle of decayed leaves was found projecting from her mouth, and a ticket was pinned to her right shoulder, on which there were the following words in pencil:—'Three of us have committed the murder. We found on her one dollar and fifteen groschen. She only prayed for her two children.'—There was not the slightest mark of violence or of anything like resistance on the body of the deceased, and a full investigation of all the circumstances led Dr. Heinrich to the conclusion that this was really an act of suicide, which deceased had thus attempted to pass off as murder. (Casper's 'Vierteljahrsschrift,' 1866, 2, 70.)

Power of self-suspension.—It has been a debated question, whether *corporeal infirmity*, or some peculiarity affecting the hands, might not interfere with the power of a person to suspend himself. This question can be decided only by reference to the special circumstances of each case. In the case of the *Prince de Condé*, it was alleged that he could not have hanged himself, in consequence of a defect in the power of one hand: it was also said that he could not have made the knots in the handkerchiefs by which he was suspended. Allegations of this kind appear to have been too hastily made in this and other instances. A determined purpose will often make up for a great degree of

corporeal infirmity; and unless we make full allowance for this in suicide, we shall always be exposed to error in drawing our conclusions. Blindness is no obstacle to this mode of perpetrating suicide; and in reference to *age*, suicide by hanging has been perpetrated by a boy of nine and by a man of ninety-seven years of age.

STRANGULATION.

CHAPTER 55.

CAUSE OF DEATH—APPEARANCES AFTER DEATH—WAS DEATH CAUSED BY STRANGULATION, OR WAS THE CONSTRICTION APPLIED TO THE NECK AFTER DEATH?—MARKS OF VIOLENCE—ACCIDENTAL HOMICIDAL AND SUICIDAL STRANGULATION.

Strangulation.—Cause of Death.—Hanging and strangulation are usually treated together, and some medical jurists have admitted no distinction in the meaning of these terms. In hanging the phenomena of asphyxia takes place in consequence of the *suspension* of the body, while in strangulation asphyxia may be induced not only by the *constriction* produced by a ligature round the neck independently of suspension, but by the simple application of *pressure*, through the fingers or otherwise, on the windpipe. M. Tardieu considers that the two modes of death should be kept distinct. The external and internal appearances in some respects differ; and while the proof of death from hanging leads to the strongest presumption of suicide, the proof of death from strangulation is equally presumptive of murder. (*Sur la Strangulation*, 'Ann. d'Hyg.' 1859, 1, 107.) This medical jurist defines 'strangulation to be an act of violence, in which constriction is applied directly to the neck, either around it or in the forepart, so as to prevent the passage of air, and thereby suddenly suspending respiration and life.' This definition obviously includes hanging, and every person who is hanged may be said to be strangled; but while there is only one method of producing death by hanging, there are various methods of producing death from strangulation. A person may be strangled by the use of a cord, band, or ligature drawn tightly round the neck, or by manual violence to the front of the neck, whereby respiration is prevented. The *cause* of death is asphyxia or apnœa. The rapidity with which it takes place will depend on the degree of pressure, and the completeness with which the act of breathing is obstructed.

M. Faure applied a ligature forcibly and suddenly to the neck of a middle-sized dog. For fifty-five seconds the animal did not appear to suffer; but he suddenly became violently agitated, his body stiffened, and he rolled convulsively on the ground. A bloody froth issued from his nostrils and throat, and he made frequent and violent efforts to respire. In three minutes and a half he was dead. In a second experiment an elastic tube was introduced into the windpipe, which admitted of being gradually closed by pressure. The animal could bear the pressure up to the reduction of one-half of the calibre of the tube; but beyond this he suffered greatly, and when the pressure was increased he had convulsions. The dog died, in great suffering, before the tube was completely closed. ('Ann. d'Hyg.' 1859, 1, 122.) It is probable that human beings die more quickly than animals, especially from the effects of manual strangulation. A sudden and violent compression of the windpipe renders a person powerless to call for assistance and give alarm, and it causes almost immediate insensibility and death, *without convulsions.* When a ligature or bandage is

used, the pressure is not so complete, and death takes place more slowly, with convulsive movements. The circulation of dark-coloured blood continues for a short interval (about four minutes), as in other cases of asphyxia. Owing to this the face and lips, in cases of accidental strangulation, have been observed to acquire a dusky or leaden hue. This arises partly from the arrest of the current of venous blood as the result of compression of the vessels, and partly from the circulation of unaërated blood. There is a fair chance of recovery if the cause of constriction is removed, and air is permitted to have access to the lungs, within a period of five minutes: this is on the assumption that no great mechanical injury has been done to the muscles and vessels of the neck.

In the act of strangulation a much greater degree of violence is commonly employed than is necessary to cause death; and hence the marks produced on the skin of the neck will be, generally speaking, much more evident than in hanging, where the mere weight of the body is the medium by which the windpipe is compressed.

POST-MORTEM APPEARANCES.

External appearances.—The appearances after death are similar to those of hanging, but the injury done to the parts about the neck is commonly greater. If much force has been used in producing the constriction, the windpipe, with the muscles and vessels in the forepart of the neck, may be found cut or lacerated, and even the vertebræ of the neck may be fractured. The face is commonly livid and swollen, the eyes wide open, prominent, and congested, and the pupils are dilated. The tongue is swollen, dark-coloured, and protruded; it is sometimes bitten by the teeth, and a bloody froth escapes from the mouth and nostrils. The principal *external* signs of strangulation are seen in the marks on the neck produced either by a cord or manual pressure. M. Tardieu has described another appearance which might be overlooked. This consists in the presence of numerous small spots of ecchymosis upon the skin of the face, neck, and chest, as well as in the conjunctivæ or membranes of the eyes. These parts present a dotted redness, which has, however, been met with in other cases besides death from strangulation. ('Ann. d'Hyg.' 1859, 1, 125.)

The mark on the neck when a ligature has been used, is commonly described as a depression, wide but not deep, and corresponding in its characters to the form and thickness of the ligature and the mode in which it has been secured. Too much importance must not be attached to this supposed correspondence when the ligature is not forthcoming. In the illustration given at page 66, the mark round the neck presented the appearance which might be expected from the use of a narrow cord. In this case, however, a soft silk neckerchief was the means of constriction; and a peculiar narrowness of the mark on one side, as seen in the engraving, was owing to the great tightness with which it had been drawn. The mark or impression produced by a ligature is generally circular, from the mode in which the pressure is produced. It may be situated at any part of the neck, but it is more commonly on the windpipe below the larynx. In manual strangulation the marks of bruising and ecchymosis will be in the front of the neck, chiefly about the larynx and below it. The circular direction of a mark produced by the ligature is not an absolute indication that strangulation has taken place without suspension of the body, since instances have been related where a circular mark has been observed in hanging (p. 51); and it is possible that some degree of obliquity may occasionally exist in the course of the depression produced by a ligature in strangulation. A medical jurist ought, therefore, to weigh all the facts connected with the position of the body, and the nature and direction of the ligature, before he forms an opinion, from the appearances presented by the mark on the neck, whether the person has been hanged or not. Greater importance is to be at-

tached to the lividity, ecchymosis, and abrasion of the skin in the course of the ligature, than to the circularity or obliquity of the depression produced by it. In the strangling of a living person by a cord, it is scarcely possible that a murderer can avoid producing on the neck marks of severe injury, and in the existence of these we have evidence of the violent manner in which death has taken place. In cases in which great violence has been used to the neck, blood may escape from the mouth and nose. It is a matter of popular belief that if there is no wound in the body there can be no bleeding. In *Reg.* v. *Millar* (C.C.C., July 1870), the prisoner was charged with the murder of a Mr. Huelin. One of the circumstances which led to the discovery of the crime was the large amount of blood which had escaped from the mouth and nose as a result of the act of strangulation. The evidence left it clear that the prisoner had murdered Mr. Huelin and his housekeeper, and had endeavoured to conceal the dead bodies. He had packed the body of the housekeeper in a box, and requested a carrier to place a cord round it. The man observed that fluid blood was oozing from the box, aud that there was a large stain of blood on the floor beneath. On opening the box, the body of the woman was found inside. There was a cord tightly tied round the neck of the deceased, and blood had escaped from the mouth and nose, and had run down the side of the box. The deceased had been strangled, and such an amount of force used in the tightening of the cord round the neck, as to lead to a copious effusion of blood from the mouth and nose. In cases of asphyxia, as it has been elsewhere stated, the blood, owing to its liquidity, continues to flow for some time after death from any lacerated wound or blood-vessel.

On the other hand, a person may be strangled, and yet the ligature, in consequence of its being soft and of a yielding nature, will not cause a perceptible depression or ecchymosis—scarcely anything more than a slight depression of the skin. If we except cases of suicide, such a condition must be rare; because assailants usually produce a much more violent constriction of the neck than is necessary to ensure the death of a person. The general lividity of the body, with the clenching of the hands and swelling and protrusion of the tongue between the lips, are more marked in strangulation than in hanging. A thin mucous froth tinged with blood is occasionally found in the air-passages in both cases. In some instances of strangulation, blood has escaped from one or both ears during the act; but this is not a usual appearance. In two well-marked cases, to be related hereafter (p. 72), the constriction was carried to a great degree, but there was no bleeding from the ears. The late Dr. Geoghegan informed me that in one instance of *suicidal* strangulation which he examined, the constriction had been produced by a riband, and the violence applied was sufficient to produce bleeding from one ear: on dissection this was found to have resulted from a rupture of the membrane of the drum of the ear. There was no froth at the mouth or nostrils, and scarcely any lividity or swelling of the face. It was further observed that the mark on the neck, which was deep, almost disappeared on the removal of the ligature. Sir W. Wilde, of Dublin, met with a case in which rupture of the membrane of the drum of the ear, with effusion of blood, was caused by strangulation. Bleeding from the ears, as a result of rupture of this membrane, must, however, be regarded as an exceptional appearance. Dr. Chevers does not mention it as having been noticed in any one of the numerous cases which he has collected in his Indian experience, although bleeding from the nostrils had been observed. ('Med. Jur. for India,' 1856, p. 374.) Without rupture of the membrane of the drum, blood could not issue from the ears, and in order that this menbrane should be ruptured, certain conditions not commonly met with are required.

Internal appearances.—In a case which occurred to Dr. Fuller, the body of

a woman who had been homicidally strangled presented the following appearances. The skin of the head, face, neck, and chest was darker than natural, and discoloured underneath, particularly that of the scalp. The brain was suffused with dark blood, the lungs gorged and of a dark colour, the bowels of a dusky-red colour. The eyes were somewhat protruded and bloodshot, the lips swollen and darker than natural, the tongue slightly protruding between the teeth, and froth issuing from the nostrils. There was a mark of pressure behind the right ear, and other marks on the neck and chest, with discolouration of the muscles. (Chevers's 'Medical Jurisprudence for India,' pp. 378, 387.) In a case of suicidal strangulation which occurred at Liverpool in 1863, the body of the deceased was found dead, cold, and rigid about seven hours after he had been seen alive. The arms were flexed, and the hands raised a little above the breast. Round the neck, just below the cricoid cartilage, was a strip of the deceased's shirt which had been used as a ligature: it was tied at the *back* of the neck. There was slight ecchymosis in the mark beneath. The face had a dark-red colour dotted with spots of a deeper red. The conjunctivæ were ecchymosed, and some blood had escaped from the nose. The brain was congested, and much fluid effused. The heart was empty; the lungs were deep in colour (congested). ('Lancet,' Aug. 15, 1863, p. 183.) Many of the cases of strangulation which have presented themselves have been too superficially examined. The most complete account of the appearances is that given by M. Tardieu. It is based on observations made in twenty-eight inspections. ('Ann. d'Hyg.' 1859, 1, 132.) The lining membrane of the larynx and windpipe was more or less reddened from congestion; sometimes it was livid or of a dark-red colour. There was a bloody froth extending into the air-tubes. The state of the lungs was variable. Contrary to what is generally alleged to be characteristic of death by asphyxia, M. Tardieu found these organs to contain but little blood. Sometimes they were congested, at other times normal. There were ruptures of the superficial air-cells producing patches of emphysema, which were seen singly or in groups. This condition, which was rarely absent, gave to the surface of the lungs the appearance of being covered with white layers of thin false membrane. When these patches were punctured, air escaped. There was an absence of that condition of the lungs which he observed in death from simple suffocation—namely, dotted ecchymosis on the surface, immediately below the investing membrane (the pleura). Throughout the substance of the lungs, effusions of blood varying in size were, however, generally found, provided an early inspection of the body was made. When some days had elapsed, the lungs were found pale or congested, without any ecchymosed or mottled appearance. The ruptured air-cells with air beneath them were still visible on the surface.

The heart presents no uniform condition; it is sometimes quite empty, and at others it contains dark fluid blood. The brain is occasionally congested, but more commonly in its natural state. In one instance blood was found effused on the brain, but this is an unusual appearance. It has also been stated that a congested state of the sexual organs both in males and females was one of the appearances connected with strangulation, but this has not been confirmed by careful observers. M. Tardieu met with nothing to call for notice in this respect in the numerous cases which he examined. The involuntary discharge of fæces, urine, and seminal fluid, described as one of the characters of death by hanging, may equally occur in death from strangulation. No importance can be attached to this as a sign of death from asphyxia in any form. It frequently occurs in sudden and violent death from any cause, and there are many instances of death from asphyxia in which it is not observed. Among the occasional appearances of violent strangulation may be mentioned injury to the windpipe and the muscles of the neck around it. One case in which the rings *of the windpipe were split* as a result of pressure, was communicated to me by

Dr. Inman of Liverpool. Several instances of laceration and rupture of the windpipe are quoted by Dr. Chevers. (Op. cit. pp. 381, 384.) In one instance the ossified thyroid cartilage had been broken and forced inwards, causing suffocation. In *Reg.* v. *O'Brien* (Liverpool Winter Assizes, 1857), a case of alleged murder by strangulation, the cartilage of the windpipe was broken; and in the case of *Pinckard* (p. 71), the windpipe was broken longitudinally. In reference to fractures of the larynx, see Casper, 'Klinische Novellen,' 1863, p. 497. In suspected homicidal strangulation it is always proper to examine the contents of the stomach for narcotic poison. In all cases the cord or ligature, if forthcoming, should be carefully examined, in order to determine whether it bears upon it marks of blood, or whether hair or other substances are adhering to it. A portion of it should be reserved for the purposes of identification. In two instances of homicidal strangulation, the ligatures found round the dead bodies were proved to correspond with portions of the same material found in the possession of the persons who were charged with the murders. In removing the ligature from the neck, the mode in which it is secured should be noticed, as this may be a fact of importance in reference to the allegation of suicide. Some instructive cases of this form of asphyxia, by M. Toulmouche, will be found in the 'Ann. d'Hyg.' 1868, 1, 193.

The medico-legal questions relative to strangulation are of the same nature as those which have been already considered in treating of hanging. Thus, in examining the body of a person suspected to have been strangled, we may be required to answer the following questions:—

Was death caused by strangulation, or *was the constricting force applied to the neck after death?*—Medical jurists have hitherto considered that the *internal* appearances throw no light upon this question. This opinion probably arose from the fact that inspections have not been made until some days after death, when the peculiar appearances of strangulation have been merged in those of putrefaction. The state of the lungs, however, may be considered as characteristic. It would be impossible by the application of a ligature round the neck of a dead body, to produce rupture of the air-cells on the surface of the lungs and effusions of blood in their substance. The state of the eyes and of the inside of the larynx and windpipe in persons who have been strangled could not be imitated by any constriction of the neck after death: no bloody mucous froth would be found in the windpipe or air-tubes.

The *external* appearances have however been considered to furnish more accurate means of distinction. Although the condition of the neck generally yields the strongest evidence, it will be proper to seek for that appearance of dotted redness or ecchymosis in the skin of the face, neck, and chest, described by Tardieu. The state of the eyes, as to their prominence and the congestion of the membranes, as well as the position of the tongue, should also be examined.

The ecchymosis about the depression on the neck, when a ligature has been employed, with the accompanying swelling and lividity of the face, are phenomena not likely to be simulated in a dead body by the application of any degree of violence. When the constriction is produced within a few minutes after death, an ecchymosed depression may result; but it is improbable that there should be any lividity or swelling of the countenance. The experiments of the late Prof. Casper, referred to in the section on Hanging (p. 44), bear directly upon this question. He determined, from his observations, that when the constricting force was not applied to the neck until *six hours* after death, the mark indicative of vital strangulation could not be produced. The following is a summary of his experiments on strangulation in the dead body:—

1. *Six hours* after death a double cord was tightly drawn around the neck of a female, below the larynx. On the following morning the cord was loosened, and the neck examined: *there was no* particular appearance. When the skin *had assumed its natural position, the* part where the cord had been

placed was scarcely distinguishable.—2. A man died of apoplexy, and *thirteen hours* after death a cord was drawn as tightly as possible around the neck, above the larynx. Six hours afterwards, on examining the neck, a soft impression, easily removed by pressure, was perceptible. There was no discolouration nor any other change to be discovered in the skin.—3. *Twenty-four hours* after death a double cord was very tightly drawn around the neck of a male subject. On examination the next day, there was a slight double depression, but no colour nor any other perceptible change. This experiment was repeated on another subject, with similar results.—4. The last experiment was on the body of a child, about one year and a half old. On the day after death a small cord was tightly drawn and secured around the neck. Twenty-four hours afterwards a slight bluish-coloured mark was perceived: it was quite superficial, but sufficiently distinct to strike the eye. On cutting into the skin there was not any blood effused beneath. We learn from these experiments, that when the attempt to simulate strangulation in a dead body is not made until *six hours* at least have elapsed, there is no risk of confounding the mark thus produced with that which is formed when the violence is applied to a living person. It is probable that, so far as *ecchymosis* is concerned, if the attempt were made after an hour or two hours had elapsed, none would be produced; and with regard to the *non-ecchymosed* mark, it is doubtful whether it could be produced after three or four hours. These periods, it must be remembered, cannot be determined with positive certainty; the results would probably vary, according to the rapidity with which the body had cooled.

It is difficult to conceive under what circumstances an attempt to simulate strangulation in a recently dead body could be made, unless for the purpose of throwing suspicion upon an innocent person connected with the deceased. When an individual has been murdered, it is not likely that the murderer would attempt to produce the appearances of strangulation on a body after death, under the idea of concealing his crime; for strangulation is in most cases an actual result of homicide, and is rarely seen as an act of suicide. In the absence of ecchymosis from the neck, it will be difficult to form an opinion, unless from circumstantial evidence. (See case, 'Ann. d'Hyg.' 1848, 1, 444.) It must be remembered, however, that there may not always be an ecchymosed *circle*; for a person may be strangled by the application of pressure to the windpipe through the medium of the finger-nails, or of any hard or resisting substance. The ecchymosis in such a case will be in detached *spots* or *patches*. In the absence of all marks of violence round the neck, we should be cautious in giving an opinion which may affect the life of an accused party; for it is not probable that homicidal strangulation could be accomplished without the production of some appearances of violence on the skin over the larynx or windpipe. It is doubtful whether strangulation can ever take place without some mark being found on the neck indicative of the means used. The bare possibility of death being caused in this manner, without leaving any appreciable trace of violence, must be admitted; although the admission scarcely applies to those cases which require medico-legal investigation. Suicides and murderers generally employ much more violence than is necessary for the purpose of destruction; hence detection is easy. But if a soft and elastic band were applied to the neck with a gradually regulated force, it is possible that a person might die strangled, without any external sign being discovered to indicate the manner of his death. Indian surgeons inform us that the Thugs, and other robbers met with in India, are thus accustomed to destroy their victims with the dexterity of practised murderers. A case involving this question of strangulation without marks of violence on the neck, was tried in France, and from the medical evidence decided in the affirmative. ('Gaz. Méd.' 9 Mai *1846, p. 375.)* The medical witness should, however, be prepared to consider

whether, in the absence of any mark, death might not have proceeded from another cause, and leave it to the authorities of the law to decide from circumstances in favour of or against the prisoner. There is, I conceive, nothing to justify a medical witness in stating that death has proceeded from strangulation, if there should be no appearance of lividity, ecchymosis, or other violence about the neck or face of the deceased. Congestion in the organs of generation is an appearance which it would not be safe to take as evidence of death from strangulation. The state of the countenance alone will scarcely warrant the expression of an opinion; for there are many kinds of death in which the features may become livid and distorted from causes totally unconnected with the application of external violence to the throat, unless accompanied by other well-marked signs of this mode of death. So again, the eyes and tongue may be protruded as a result of putrefactive changes. Let not a witness, then, lend himself as an instrument for the condemnation of a person against whom nothing but a strong suspicion from circumstances may be raised, and where medical evidence is unable to furnish any distinct and conclusive proofs of death from strangulation. This caution is especially necessary in reference to the inspection of bodies which are in a state of putrefaction. A medical man, already provided with a theory of the cause of death by the discovery of a rope or other means of constriction, may easily arrive at the conclusion that death has taken place from strangulation. The absence of the usual confirmatory appearances in the body may be ascribed to decomposition, and those caused by decomposition may be set down to strangulation! When there is obvious mechanical violence to the neck, such as fracture of the larynx or windpipe, with laceration of the muscles beneath, and a visible depression, such as a cord, a ligature, or manual pressure would produce, a medical opinion may be fairly given in spite of putrefaction. But when, in a putrefied body, indistinct marks on the neck, or patches of discolouration, are relied upon as evidence of homicide, there is great risk of a serious medical mistake. See on this question the cases of Mrs. *Ellen Byrne* (Dublin, Aug. 1842, at p. 115, Vol. I.), and of *Reg.* v. *Mahaig* (Kingston Winter Assizes, 1863, p. 118, Vol. I.). For an account of the appearances presented by a strangled body thirty-eight days after interment, see Henke's 'Zeitschrift der S. A.' 1842, 1, 235; and 2, 310.

In cases of alleged drowning, it is sometimes the practice to ask a medical witness how far his opinion of the cause of death has been influenced by the discovery of the dead body in or near water. In cases of alleged strangulation a similar question may be put in reference to the discovery of a rope or ligature round the neck of the deceased, or in the apartment in which the dead body is found. A medical opinion should rest upon the clear and obvious effects produced on the neck, and on the structures below the skin, and not upon the mere presence of a cord or ligature. This might be put round the neck of a dead body or near to it, for a malicious purpose. The act of strangulation should be, medically speaking, as distinctly provable without the production of a rope, as the act of stabbing without the production of the knife which inflicted the stab. If these principles are not strictly adhered to in practice policemen would be as competent as medical experts to give evidence of the cause of death in cases of alleged strangulation.

It is scarcely necessary to state that all marks of violence on the body of a supposed strangled person should be accurately noted, as the questions respecting them, however slight, are material. The witness will be expected to state whether they were inflicted before or after death: if before, whether they were sufficient to account for death, or whether they were such as to be explicable on the supposition of an accidental, suicidal, or homicidal origin. It should be observed whether there exist any *morbid changes*, sufficient to account for death.

in either of the three great cavities of the body, as this kind of evidence may be essential in the progress of the case. In reference to females, whether children or adults, the surgeon should not neglect to examine the sexual organs—to ascertain whether there are any marks of violation. Cases have occurred in which rape has been perpetrated, and strangulation resorted to for the purpose of concealing the crime.

Was the strangulation the result of accident, suicide, or homicide?—Strangulation, like hanging, is occasionally the result of *accident*, but the occurrence may be looked upon as rare. When the body is not suspended, it is commonly more in the power of a person to assist himself, and escape from the constriction: hence accidental strangulation is less frequent than accidental hanging. A few instances of accidental strangulation are on record. One is reported by the late Dr. Gordon Smith. The subject was a boy, who was accustomed to move about with a heavy weight suspended by a string round his neck. One day he was found dead in a chair: the weight appeared to have slipped, and to have drawn the cord tightly round the forepart of his neck. In June 1839, a girl was accidentally strangled in the following manner: she was employed in carrying fish in a basket at her back, supported by a leathern strap passing round the front of her neck, above her shoulders. She was found dead, sitting on a stone wall; the basket had slipped off, probably while she was resting, and had thus raised the strap, which had firmly compressed the windpipe. A similar case is recorded by Watson ('On Homicide'). In November 1864, I saw the following case in Guy's Hospital. A boy, æt. 14, while working in a factory was caught by a silk neck-tie in the band of an engine, and his neck was by this drawn down against one of the revolving shafts. The silk handkerchief being knotted and tightly twisted round his neck, his throat was firmly compressed for about one minute. The tie was then cut. As a result of the strangulation, he became black in the face, and blood escaped from his mouth and ears. He was insensible for six or seven minutes after the ligature had been removed. He then revived and was able to speak, but could not hold up his head. When brought to the hospital soon afterwards, he was sensible: his face was pale, his lips were livid, his eyes suffused, and the conjunctivæ injected. He breathed without difficulty, and only complained of pain when he moved his head. There was a deep circular depression round his neck over the windpipe, and the skin was much lacerated and bruised. The mark *a b*, in the engraving, Fig. 140, was about three-quarters of an inch in width on the side represented. The circumference of the neck was twelve inches, while the inner circumference of the handkerchief which compressed the neck, was only eight inches. From this difference it will be perceived that the neck sustained a very strong compression, which accounts for the flow of blood from the mouth and ears.

Fig. 140.

Case of accidental strangulation.

The boy informed me that at the time of the accident he felt no pain: he had a sense of choking, and then became insensible. For at least *one minute* no air reached the lungs. He recovered, and left the hospital in about eighteen days. The facts of this case confirm the observations of Casper and others on the rapidity with which insensibility comes on from compression of the windpipe.

As a general rule, cases of accidental strangulation present no difficulty to a medical jurist, provided the relations of the body to surrounding objects and the compressing force have not been disturbed. (If possible, a photograph or drawing should be made at once of the position of the body and the surrounding objects.) Should the body have been removed from the place in which it was first discovered, or the ligature taken from the neck, we can only establish a presumption of accident from the description given.

When a charge of murder is instituted against a person, an attempt is not unfrequently made by counsel for the defence, to show the probability that the deceased might have fallen while in a state of intoxication, and have become accidentally strangled, either by a tight cravat or by some foreign substance exerting pressure on the windpipe. If we admit the possibility of an occurrence of this nature, we must not lose sight of the existence of other more probable modes of death, nor should we allow our judgment to be so swayed as to abandon what is probable for that which is merely possible.

Suicidal strangulation.—This mode of suicide must be regarded as of extremely rare occurrence, and, except under particular circumstances, impossible. The possibility of an individual strangling himself was for a long time denied by medical jurists; for it was presumed that when the force was applied by the hand, all power would be lost as soon as the compression of the windpipe commenced. This reasoning, which is physiologically correct, is, however, only applicable to those cases in which the windpipe is voluntarily compressed by the fingers. When a person determined on suicide allows the windpipe to be compressed, by leaning with the whole weight of his body on a cord passed round his neck and attached to a fixed point, he may perish in this manner almost as readily as if he had hanged himself; for insensibility and death will soon supervene. In the chapter on Hanging, it was stated that suicides were often found with their bodies in close contact with the ground; and cases were described in which strangulation was accomplished in the manner above described, while the suicide was in a sitting or kneeling posture (pp. 55, 56.) On other occasions, the peculiar disposition or nature of the ligature has enabled a person bent on suicide to strangle himself without much difficulty. An instance is related by Orfila, in which two cravats, that were twisted several times round the neck of the deceased, who was discovered lying on his bed, had effectually served the purpose of self-destruction. ('Méd. Lég.' vol. 2, p. 389.) Sometimes strangulation has been suicidally effected by a rough cord passed repeatedly round the neck, and tightened by being pulled with each hand. The number of coils would still cause some pressure to be exerted even when the grasp was relaxed by death. (See 'Guy's Hospital Reports,' Oct. 1851.) Other cases are related, in which suicides have succeeded in strangling themselves by tightening the ligature with a stick (see case by Mr. Thorp, 'Guy's Hospital Reports,' Oct. 1851); or when the ligature was formed of thick and rough material, by simply tying it in a knot. A young female of Montevrin, in the Canton of Lagny, was found one morning dead in bed, lying on her face, with a woollen garter passed twice round her neck, and secured in front by two simple knots, strongly tied the one on the other. The body was in an incipient state of putrefaction, but still there was a mark corresponding to the ligature. This was shallow, of a slight greenish colour, especially in front, and presented here and there ecchymosed spots; posteriorly the mark was scarcely visible. The face was livid and swollen: a quantity of bloody mucus escaped from the mouth and nostrils. The lips were livid: the tongue was protruded, and firmly compressed between the teeth: the body presented over the trunk and limbs patches of ecchymosis. On cutting into the mark on the neck there was no extravasation, neither was there any apparent injury to the deep-seated muscles or adjacent parts; the lungs were gorged with blood,

but the other viscera presented no particular appearance. The medical examiners gave it as their opinion that the deceased had died from apoplexy resulting from strangulation. They stated that the head was not examined, and they judged that apoplexy was the cause of death from the condition of the face. A more important question was, whether the strangulation was suicidal or homicidal. There was some reason to suspect the latter, and indeed a person was pointed out as the probable murderer; but a rigorous medical investigation, relative to the state of the body and clothes, as well as numerous collateral circumstances, satisfactorily established that this was really an act of self-destruction. ('Ann. d'Hyg.' 1829, 2, 440: see also a case by Dr. Simeons, Henke's 'Zeitschrift,' 1843, 1, 335.)

Sometimes the appearance of the *mark* on the neck will allow us to establish a slight presumption for or against homicide. In homicidal strangulation, from the unnecessary violence used, we may expect to find the skin much ecchymosed, lacerated, or excoriated, and the deep-seated parts, such as the muscles and vessels, as well as the windpipe itself, more or less bruised, lacerated, or extensively injured. Such a degree of violence is not commonly to be expected in *suicidal* strangulation.

The mark on the neck has furnished evidence of this mode of death, even under circumstances in which it might be supposed all evidence would be destroyed. Dr. Schüppel of Tübingen describes a case in which he was able to verify the fact of strangulation after the burning of the body. In August 1869, a fire took place in a cottage in which there were at the time a man and his wife with a stepson (æt. 10) and a new-born infant. The man escaped with the infant, and said that his wife and stepson had left the house before the fire. This was proved to be a falsehood: their dead bodies were discovered much burnt, and the carbonized remains were collected and buried in one coffin. A suspicion of incendiarism and murder arose, and the bodies were exhumed thirteen days after the burial and submitted to the examination of Dr. Schüppel.

The body of the wife was so completely destroyed by fire that no satisfactory medical evidence could be obtained from it. The parts not entirely burnt were much putrefied in both. On examining the burnt remains of the boy, there was a horizontal mark or depression encircling the greater part of the neck, about one-quarter of an inch wide and presenting a smooth surface quite distinct from the broken, blistered and carbonized skin above and below it (Fig. 141). The width of the mark in the middle of the neck (the nape), where it was most superficial, was about a quarter of an inch; on each side of the neck where the pressure had been greatest it was three-fifths of an inch. The depth of the mark at the sides was one-eighth of an inch. This became less as it approached the nape, where it was reduced to one-fiftieth of an inch. On examining the remains of the burnt head and face, it was found that the skull was fractured and that the tongue protruded remarkably from the mouth. Between the larynx and lower jaw, there was a depression such as might have been caused by a cord or ligature—but the mark was not so clear or distinct as that at the back of the neck. The bones of the body were broken and displaced.

Fig. 141.

Mark of strangulation on the burnt neck of a boy æt. 10, showing the depression produced by the ligature on the back of the neck.

From this condition of the neck and tongue Dr. Schüppel drew the conclusion that the boy had died from strangulation, and that the ligature had been applied to the neck while the boy was living, and had been burnt with the body (Horn's 'Vierteljahrsschrift,' 1870, 2, 140). Dr. Schüppel found by experiment that when a ligature was drawn tightly and left on a *dead* body submitted to fire, it for a time protected the depressed portion of skin, and although ultimately consumed, it allowed the part compressed to retain the smoothness observed in this case. When the ligature was applied with all the force required to produce strangulation, but removed before the application of fire, the appearances of the depression or mark were lost when fire was applied, owing to the swelling and blistering of the skin. The man accused of this double crime alleged in defence that a beam might have fallen and produced the mark observed on the neck; but this would not explain the facts. The protrusion of the tongue was a strong proof of the strangulation of a living person.

The man was found guilty of the murder of his wife and stepson, and a few days afterwards he committed suicide by hanging himself while in prison. He had set fire to the house after the murder, in order to conceal the double crime. The burnt neck of the boy with the mark upon it is preserved in the Museum of the University of Tübingen.

In the case of the *Countess of Goerlitz* (vol. 1, p. 704), whose body was destroyed by burning, the tongue protruded from the mouth, thus indicating death by strangulation. See also a case by Mr. Jackson (vol. 1, p. 689), in which, in spite of the burning of the body, some of the appearances of strangulation were found.

Supposing the marks of fingers or finger-nails to exist, the presumption is in favour of homicide, as also in all cases where the actual cause of strangulation is not at once apparent on the discovery of the body. Suicides are not likely to strangle themselves in any other manner than by a ligature applied circularly. If the ligature be still around the neck of the deceased, the position of the knot may throw some light upon the case; if tied in two or three knots at the back of the neck, the presumption is assuredly in favour of homicide. Then, again, the nature of the ligature should be attended to. Suicides generally employ for ligatures those articles of dress which belong to them and are nearest at hand,—such as handkerchiefs, stockings or garters. Some medical jurists have attempted to limit the varieties of suicidal strangulation; contending that when a subject is found strangled in any other way than in one of those arbitrarily laid down by them as essential to suicide, it is evidence of murder. The fact is, cases as yet are few, and each new instance of suicidal strangulation presents us with something novel in the means of its accomplishment: a sufficient proof, therefore, that we ought to be cautious how we decide these questions by hastily preconceived rules.

The mode in which the notorious criminal *Greenacre* attempted to destroy himself by suicidal strangulation presented some novelty; and certainly it does not fall within the methods which, according to some medical jurists, suicides ought on these occasions to adopt! In March 1837, while he was confined at a station-house, he was found by an inspector who entered the room, lying on the floor with a handkerchief drawn tightly around his neck by means of a loop, into which he had inserted his foot. When first seen his face was livid and he was apparently dead: the handkerchief was cut, and bleeding, with other means of resuscitation, was employed with success. The manner in which General Pichegru was found strangled in prison gave rise to a strong suspicion of murder, merely from the singularity of the method adopted. The ligature which he employed was found tightened around his neck by means of a stick, which had been twisted, and then fixed behind one ear: there was no lividity of the face. It was contended *that Napoleon I. had* caused the General to be strangled *or suffocated, and that the ligature was afterwards* applied. The evidence of

this having been an act of homicide is very weak; and, so far as the medical circumstances extend, there is no reason to doubt that it was an act of suicide. The only obstacle to the admission of this, in the opinion of some jurists, was the employment of a stick for the purpose of tightening the ligature; but there are at least two similar cases on record, in which a suspicion of murder could not be entertained: one of these is referred to by Metzger (Op. cit. p. 309), and I have recorded another in 'Guy's Hospital Reports' for October 1851. There may be disease, such as paralysis or deformity in one or both of the arms, which may render it impossible for a person to tie a ligature around his own neck. The only caution here to be guarded against is that we do not push this doctrine of incapability too far. When there is a fixed resolution, many apparent impossibilities may be overcome by a person bent on suicide. The following case is, in this respect, instructive:—A middle-aged woman was brought into the Hôtel-Dieu, Paris, in March 1833, labouring under such a degree of mental excitement as almost to amount to insanity. Soon after her admission she destroyed herself by strangulation. The nurse, in going round the ward, saw her lying at the side of the bed with her head hanging out. Upon examination it was found that she was quite dead, and that there was a silk handkerchief around her neck. The handkerchief had been carried twice round the neck and then tied in front. The eyes and eyelids were strongly reddened and swollen. The mark of the ligature around the neck was deep, ecchymosed and partially excoriated: the brain, though a little congested, was healthy. The other organs presented no appearance calling for notice. ('Ann. d'Hyg.' 1833, 2, 153.) It is worthy of remark that in this instance, in which there could be no doubt of suicidal strangulation, the deceased had lost four fingers of her right hand, so that this member had been from an early period of but little service to her; nevertheless she contrived to tie the cravat round her neck with great firmness and dexterity. It is easy to conceive that, had her body been found in a suspicious locality, a plausible opinion of homicidal strangulation might have been formed from the maimed condition of the hand. This case, then, will serve to convey a proper caution in drawing inferences as to acts which persons labouring under any corporeal infirmity are capable of performing when they make attempts on their own lives.

Although the cases just related show that suicidal strangulation may be effected under unexpected circumstances, yet in a case of murder by strangulation, it would not be easy to simulate suicide: it would at any rate require great skill and premeditated contrivance on the part of a murderer so to dispose the body of his victim, or to place it in such a relation to surrounding objects, as to render a suspicion of suicide even probable. Thus, if the cord or ligature should be found loose or detached,—if the ecchymosis or mark in the neck should not accurately correspond to the points of greatest pressure,—if, moreover, the means of constriction were not evident when the body was first discovered and before it had been removed from its situation, there would be fair grounds for presuming that the act was homicidal. In cases in which strangulation has resulted from a compression of the windpipe by the fingers, and where there are fixed ecchymosed marks indicative of direct manual violence, we have the strongest presumptive evidence of murder; for neither accident nor suicide could be urged as affording a satisfactory explanation of their presence.

Homicidal strangulation.—Strangulation occasionally comes before our Courts of law as a question of murder: and when a person has been tried upon a charge of this kind, the circumstances have been commonly so clear as to render the duty of a medical witness one of a simple nature. Difficulties, however, have occasionally arisen, as may be seen by reference to the cases of *the Queen* v. *Taylor* (York Lent Assizes, 1842), *the Queen* v. *Greek* (Salisbury

Lent Assizes, 1842), *the Queen* v. *Reynolds* (Central Criminal Court, Dec. 1842), and *the Queen* v. *Fowles* (Stafford Lent Assizes, 1841). In *Reynolds'* case it was left uncertain by the medical evidence whether death was due to strangulation or malicious exposure to cold; and as the indictment only charged the former act, the prisoners were acquitted! For a full report of a case in which the question was whether the deceased had committed suicide by hanging, or had been strangled by her husband, I must refer the reader to 'Cormack's Journal' for 1844, p. 344. The prisoner was acquitted on a verdict of 'not proven;' but there could be no medical doubt of his guilt. A case of alleged murder by strangulation (*Commonwealth* v. *Flannagan*) will be found reported in the 'American Jour. of Med. Sciences,' Oct. 1845, p. 389.

Among important cases of murder by strangulation which have been brought to trial in this country, there are two in which I was required, on the part of the Crown, to investigate the circumstances, and give evidence respecting the mode in which death took place, as well as to assign the medical reasons which led to the inference that the deceased persons could not have died by their own hands. For a full report of one of these cases (*Reg.* v. *Drory*, Essex Lent Assizes, 1851), I must refer the reader to 'Guy's Hospital Reports,' Oct. 1851. The deceased, a young woman, was found lying upon her face strangled, with a rope coiled three times round the lower part of her neck: the two inner coils (involving the windpipe) being tight and the outer coil loose, the end of the cord being placed loosely near the left hand of the deceased, which was raised towards it. The length of the free portion of cord was not sufficient to allow of the deceased grasping it, and tightening it to such a degree as to produce the great amount of violence found on the neck. The windpipe was flattened and its canal completely obstructed by the pressure of the two inner coils of rope. Admitting that a person could draw one coil so tightly, he could not retain the power of drawing a second with equal force, and after this a third. Fleischmann's experiments prove that pressure on the trachea, sufficient to flatten it, is attended with instantaneous insensibility and loss of power (p. 37, also case at p. 66). In *Drory's* case too much was done: one coil might have left the question of homicide doubtful—three coils, so drawn, were inconsistent with the theory of suicide. The prisoner, a man of good social position, was strenuously but, at the same time, fairly defended by able counsel; but the evidence, medical and circumstantial, clearly traced the crime to him, and he was convicted. Most of the reported cases of suicidal strangulation published by writers on medical jurisprudence were read at the trial in open court, and the details compared with the evidence for the prosecution; but all admitted of a satisfactory explanation. Two medical witnesses appeared for the defence. They were called with a view of showing that the deceased might have destroyed herself; but the cases within their own experience, which they adduced to support their opinion, were so entirely different in the details that they merely showed the possibility of suicide by strangulation, and not that suicide was possible or probable in the case under investigation.

In the other case (*Reg.* v. *Pinckard*, Northampton Lent Assizes, 1852), it was proved that deceased was found in a sitting posture in a corner of her room on the floor, with a narrow tape round her neck, hung loosely and singly over a small brass hook about three feet above her head. Her clothes were placed smoothly under her, and her hands were open and stretched out by her side. The annexed engraving, Fig. 142, taken from a plan of the room soon after the murder, will give an idea of the position of the body. There was a severe bruise over the right eye, and there were marks of blood on the tape, as well as on the floor and wall of the room at a distance from the body. There was a stain of fresh blood on the knot of the tape where it passed over the hook, and there was no blood on the hands of the deceased. The windpipe for about an inch and a half was

lacerated longitudinally in its rings, and there was a deep circular mark round the neck in the course of the doubled tape, as if either from great pressure applied by some person, or from the weight of the suspended body. The latter hypothesis, so far as the tape round the neck was concerned, was untenable. The body of the deceased did not weigh probably less than 120 pounds, while the tape found round her neck broke with a weight of 49 pounds: hence the deceased could not have been freely suspended by it. Apart from this the injuries to the parts about the neck, including the longitudinal fracture of the windpipe were not such as the tape could have produced as a result of partial suspension in the position in which the deceased's body was found. The noose had been so placed that the greatest pressure was on the back of the neck, and the least in front, where the greatest amount of mechanical injury was actually done. The deceased had been strangled probably by manual violence in the first instance, and afterwards by the use of a ligature drawn tightly by the hand. The body was then looped up with the double tape. These facts, taken in connection with the smooth arrangement of the clothes, the severe marks of violence on the body (inexplicable on the hypothesis of suicide), and the marks of blood and struggling in the room, proved that there had been homicidal interference; and the crime was brought home to the prisoner by a series of moral and circumstantial proofs inconsistent with her innocence and only consistent with her guilt.

Fig. 142.

In directing attention to the circumstantial evidence, it was suggested that the dress of the deceased might be torn or discomposed, a fact indicative of a violent struggle, and, *cæteris paribus*, incompatible with suicide; but it is proper to remark that evidence of murder, as in *Pinckard's* case, may be obtained by finding a smooth and undisturbed state of the dress, as well as attitude of the body. In fact, whosoever attempts to imitate suicide under such a form of murder must, when the facts are properly investigated, inevitably fail in his object. The assassin either does too little, or he does too much. The woman who committed the murder in *Pinckard's* case had been a nurse in an infirmary, and accustomed to lay out dead bodies. After the murder she appears to have carried out, unthinkingly, her professional experience, by smoothing the clothes under the body, placing the legs at full length, the arms out straight by the side, and the hands open and laid out! Such a condition of the body was quite inexplicable on the supposition of suicide, considering the amount of violence which must have attended the act of strangulation. In the case of *Drory*, the criminal had attempted to make the death appear like an act of suicide by placing the lower end of the rope near the hand of the deceased: but he selected the *left* hand when the deceased was right-handed, and he did not leave enough rope free from the neck for either hand to grasp in order to produce the violent constriction of the neck caused by the two inner coils. Both of these criminals confessed their crimes before execution. Other reports

of cases of alleged death from homicidal strangulation will be found in the 'Med. Gaz.' vol. 41, p. 295, and vol. 44, p. 1084.

It is proper to notice, in this place, the frequent occurrence within a recent period of what are called '*Garotte robberies.*' The system of murder normally pursued by the Thugs in India appears to have been imported into England, and many lives have been destroyed in the manufacturing districts and in large towns by the employment of strangulation for the purpose of robbery. In spite of some convictions, there is reason to believe that many criminals set the law at defiance. The rigorous proof required of facts, which under these assaults can rarely admit of direct proof, confers complete impunity on the assailants. The attack is made during darkness: the person is seized by the windpipe from behind, or a bandage is thrown around his neck; and this is suddenly tightened, while accomplices are engaged in perpetrating robbery. The nature of the assault by pressure on the windpipe, renders it impossible to give an alarm or call for assistance. The person assaulted, if he should recover, is seldom able to identify an assailant: he is attacked from behind, is rendered immediately senseless and powerless, and can rarely offer any resistance. Recovery or death in such cases depends on the lapse of a few seconds, more or less, during which the constriction of the neck is continued—on the degree of constriction, and the age, sex, and strength of constitution of the person assaulted. An attempt at strangulation, as in garotting, besides inflicting serious local injury to the windpipe and other parts near to it, may cause a state of insensibility which may continue for some hours. There is severe pain in the throat, with difficulty of speaking and swallowing, and if the larynx is seriously injured there may be loss of voice. Dumbness, however, is not one of the secondary symptoms: and loss of voice is usually only temporary during the pressure. By the 24th and 25th Victoria, c. 100, s. 14, it is enacted, *inter alia*, that 'whosoever shall attempt to drown, suffocate, or strangle any person, with intent to commit *murder*, shall, whether any bodily injury be effected or not, be guilty of felony; and being convicted thereof shall be liable, at the discretion of the Court, to be kept in penal servitude for life, or for any term not less than three years, . . . or to be imprisoned for any term not exceeding two years.' As the intent in these cases is to perpetrate *robbery*, and not murder, another section (21) has been framed, for the prevention of the crime of *garotting*: 'Whosoever shall, by any means whatsoever, attempt to choke, suffocate, or strangle any other person, or shall, by any means calculated to choke, suffocate, or strangle, attempt to render any other person insensible, unconscious, or incapable of resistance, with intent, in any of such cases, to enable himself, or any other person, to commit, or with intent in any of such cases thereby to assist any other person in committing any indictable offence, shall be guilty of felony; and being convicted thereof shall be liable, at the discretion of the Court, to be kept in penal servitude for life, or for any term not less than three years, . . . or to be imprisoned for any term not exceeding two years,' &c. From the frequent occurrence of these cases it is obvious that the law is not sufficiently stringent. The *lex talionis* carried so far as to half-strangle the criminal would afford a much better protection to the public, and would have in it something of a retributory character.

Marks of violence.—It may be inquired whether *marks* of violence on the body, or blood-stains on the clothes, furniture, or in the apartment, do not afford strong evidence of *homicidal* strangulation. The answer is—if the marks of violence are such that they could not possibly have arisen from any accident before death, or that they could not possibly have been self-inflicted, they afford the strongest evidence of murder. But the cases wherein so positive an answer can be returned are exceptions to the rule. It is not always in our power to distinguish *accidental* or *self-inflicted* from homicidal violence; and we are

always bound to look to the probability of accident, or of previous attempts at suicide being the source of those personal injuries which may be apparent on a strangled body.

In the following case, communicated to me by Dr. Campbell of Lisburn, the marks of injury to the neck clearly established homicidal strangulation. The dead body of an old man, æt. 70, was found lying in a potato-field adjoining his house, on the 10th of October, 1842. His family consisted of a son, the son's wife, and a male servant, brother to the son's wife. The deceased had gone to gather potatoes for the servant, who was digging. On its being known to their neighbours that the body had been found in the field, suspicions were excited that his death had resulted from violence. An inspection of the body was ordered. On opening the skull a large quantity of dark fluid blood escaped, the membranes of the brain were greatly congested, the sinuses or large veins were gorged with blood, and the brain itself was also congested. Several clots of blood were observed in the lateral ventricles, and some over the surface of the brain. In the chest the lungs were filled with dark fluid blood, the air-cells were ruptured, and there was considerable emphysema (diffusion of air). The right side of the heart was distended with dark blood. There was nothing remarkable in the abdominal viscera, but the lining-membrane of the stomach, which was about half filled with potatoes, was congested. On the neck, over the left side of the thyroid cartilage, there was a slight mark of a crescentic form, with a corresponding though slighter mark on the opposite side. On removing the skin a large quantity of coagulated blood was seen immediately beneath the marks, and in the substance of the muscles. On removing this, the left side of the cartilage, which was ossified, was found much depressed, and traversed by a fracture nearly an inch in length. From the general appearances presented by the body, together with the injury to the thyroid cartilage, an opinion was given that death had arisen from manual strangulation—and, from the particular form of the external marks over the neck, *by a left hand*. Several witnesses were examined, who proved that the deceased and the servant were on bad terms, the deceased having threatened to dismiss the servant, and that before they had gone to dig potatoes, the servant said he would be revenged of his master. The servant was committed for trial at the assizes. One of the magistrates present desired that the prisoner might be requested to throw a stone, in order to ascertain if he was left-handed, which he did with the *left hand*. At the trial the sister of the prisoner swore that she saw her brother strangling the old man, and several witnesses proved that he had maltreated the deceased on many previous occasions. The counsel for the defence advocated the prisoner's case so well, and proved the sister to be of so bad a character, that the jury, having some doubt as to her veracity, acquitted him. Dr. Campbell forwarded to me the ossified larynx, which was fractured, as above described, evidently by great manual violence. For the account of another case by Dr. Keiller, in which fracture of the larynx was properly regarded as a strong fact in favour of homicidal strangulation, see 'Edin. Med. Journal,' Dec. 1855, p. 527.

There may be *several marks* on the neck, but then the person may have tried to strangle himself more than once. The throat may be cut—there may be a deep-seated stab or gunshot wound, involving some of the important organs of the body—or poison may be found in the stomach; but in a purely medical point of view, how are we to know that the deceased did not actually make the marks, inflict the wounds, or take the poison before he succeeded in strangling himself? In the chapters on Drowning and Hanging, we have seen what suicides can do when they are desperately bent on destroying themselves. Wounds and personal injuries often create serious difficulties to a medical jurist, which it requires the greatest caution and prudence on his part

to meet and explain. The prejudice of the public mind is such, that the discovery of a strangled person, with marks of personal injury or of poisoning in his stomach, would, in most cases, lead to a charge of murder, unless the facts rendered it clearly impossible that any attempt could have been made on his life. It is against this prejudice that a medical witness must strenuously guard himself: he may be abused for not joining in the outcry of the vulgar, but the best recompense for this abuse will be the conviction that he is interposing the shield of science to protect a possibly innocent fellow-creature from the senseless denunciations of ignorance. Further, before a charge of murder by strangulation is raised against any person from marks or appearances found on a dead body, care should be taken that they admit of no other probable explanation than the direct application of violence. Even if marks indicative of strangulation are discovered, the question arises whether they may not have been produced by the deceased upon himself in an attempt at suicide which may have failed. If the body of a person is allowed to cool, with a handkerchief, band, or tightly-fitting collar round the neck, a mark resembling that of strangulation will be produced. Before any opinion is given that murder has been perpetrated or attempted, the proofs on which reliance is placed should be distinct, conclusive, and satisfactory. (See the cases of Mrs. *Byrne* and *Mahaig*, Vol. I. pp. 115, 118, also cases at p. 28, *ante*.)

In the dead bodies of infants and children, in whom the neck is short, a mark is occasionally seen which arises from the bending of the head; and in short-necked persons a similar mark or depression has been noticed after death, in front of the neck. These marks are then rendered more prominent by their assuming a livid appearance. They might, at first, be mistaken for marks produced by a ligature in attempted strangulation. In one case a death from apoplexy was attributed to homicidal strangulation from a cadaveric change of this kind. ('Ann. d'Hyg.' 1859, 1, 139; and 26, 149.) The matter was set right by the late M. Ollivier. Homicidal strangulation may be perpetrated on the weak and infirm without causing any noise or creating alarm. In the first place, if the throat is at once seized and firmly compressed, no cry can be made, nor any noise produced to excite the attention of those who are near. In June 1857, an aged woman was strangled in her shop by an apprentice in so short a time and with such facility, that her husband, who was only separated from her by a slight partition, heard no noise or disturbance during this act of murder. ('Ann. d'Hyg.' 1859, 1, 157.)

It cannot be disputed that in contested questions of suicidal or homicidal strangulation, rare as they are, we must be often greatly indebted to evidence founded on circumstances, as well as to moral presumptions. How far a medical jurist may be allowed to make use of these in the formation of an opinion it will be for the Court to determine. Generally speaking, his duty is rigorously confined to the furnishing of medical evidence from medical data alone; but instances present themselves in which this rule must be departed from, or the course of justice will be impeded. Besides, there are numerous circumstances of a collateral nature which may materially modify a medical opinion. Thus the sight of a ligature, the state of the dress, and the attitude of the deceased when discovered, although not strictly medical circumstances, bear directly upon medical opinions; and that evidence ought not to be objected to which is partly founded upon facts of this nature. It must occur to all, that without circumstantial evidence, the best medical opinion in these cases will often amount to nothing. It may be, for example, no more than this: the case is either one of homicide or suicide, and why is such an indefinite answer to be returned? Because, in the abstract view of strangulation, it is not easy to determine whether a ligature was *suicidally* applied round the neck or not. The *appearances may be in many cases* the same, and where they are

different, this difference may be due to accident, so that it is a mistake to suppose that we must look to medical circumstances *alone* for clearing up this intricate question. On some occasions the theory of homicide or suicide will be equally consistent with the facts. The cases of Dr. *Franck* and his son, which occurred at Brighton in November 1855, were of this ambiguous character. Whether the son strangled himself, or was strangled by his father, was a question which could not be satisfactorily solved by medical, moral, or circumstantial evidence. Unfortunately, the bodies did not undergo a proper medico-legal inspection.

The following case, reported in the 'Annales d'Hygiène' (1829, 2, 447), was pronounced to be a case of *suicidal* strangulation by some, and of *homicidal* by others. A servant-girl was found dead in her bed. The body of the deceased was rigid and lying in a constrained position, with the face turned to the right, and there was a handkerchief so firmly tied around the neck that it was with some difficulty removed. A quantity of froth and bloody mucus escaped from the mouth and nostrils. The knot in the handkerchief which was tied round the neck was on the *left side*, as it is customary to find it in left-handed people. The deceased was not left-handed, and there was no reason to suspect that she had intended to commit suicide; she went to bed the night before in her usual health and spirits. There was no mark of violence externally, but there were large patches of cadaveric lividity scattered over the skin. There was a deep impression of a necklace on the skin of the neck, which had resulted, it was supposed, from the force with which the handkerchief had been tied. The neck appeared swollen, especially on the right side. On opening the head, the vessels of the brain were found distended, especially on the right side; and on this side about half-an-ounce of blood was found extravasated. In the mouth the tongue projected forwards between the teeth, but was uninjured by them. The contents of the chest and abdomen presented nothing unusual: the lungs were gorged with blood.

The examiners attributed death to strangulation, and in their judgment the act was not suicidal. Among the reasons assigned for this opinion, was the fact that the handkerchief was tied on the neck in *two knots*, and the deceased could *not* have made more than one; her senses would have failed her before she could have made a second, or at least before she could have made it so perfectly as the first. The position in which the body was found, the cheerful conduct of the deceased on the night before her death, and the absence of all motive to induce her to commit suicide, were facts also adverse to self-destruction; but as no criminal could be pointed out, it was suggested that the act was suicidal. The College of Brunswick, being appealed to by the legal authorities, concluded that deceased could not have died from strangulation, and assigned an attack of apoplexy as the probable cause of death, from the extravasation of blood met with in the brain. They considered that the girl had *herself* tied the handkerchief round her neck for the purpose of keeping herself warm, as the night on which she died was extremely cold. They admitted the probability that she might have imprudently tied the handkerchief too tightly—a circumstance which had perhaps facilitated the congestion of the cerebral vessels and extravasation of blood. The reason assigned by the College for their opinion was, that the handkerchief had produced no ecchymosed mark on the neck; but, as it is now well known that a person may be strangled and no ecchymosis be produced, the argument that the deceased had not died by strangulation falls to the ground. The motive alleged for the handkerchief being placed around the neck appeared wholly inconsistent with the facts. It is scarcely to be imagined that any person who did not contemplate suicide would retire to rest with a handkerchief tied in a double knot *so tightly* around the neck as to render it very difficult to remove: it was evidently so tight that strangula-

tion might easily have resulted from the constriction. The apoplectic appearances in the head may have been due to the impeded circulation of the blood, in consequence of the ligature. There was, therefore, nothing to contradict the opinion of death from strangulation: no morbid cause capable of giving rise to sudden death (excepting effusion of blood on the brain, which has already been accounted for) was discovered in the body. Whether the ligature was placed round the neck by the female herself, or by another, may be a matter of doubt: yet when we consider that there was nothing absolutely impossible in the act on her part, that there were no appearances of violence about her person or clothes, and no evidence of any individual having had access to the apartment, it appears most probable that the strangulation was *suicidal*.

In *Reg.* v. *Cooper* (Shrewsbury Lent Assizes, 1863), the prisoner was convicted of the murder of his son by strangulation. In this case a twisted cotton handkerchief was found round the neck of the deceased. It was tied tightly, and with a double knot: a finger could not be introduced between it and the neck. The face had a bloated appearance,—the tongue protruded, and the teeth were deeply indented into it. The deceased was a boy only eight years old. The surgeon rightly concluded that this was a case of homicidal strangulation. The carelessness with which these inquiries are sometimes conducted is shown by the fact that in *Reg.* v. *Browning* (Central Criminal Court, Dec. 1845), in which the prisoner was convicted of murder by strangulation, the verdict of the coroner's jury was to the effect that deceased had strangled herself in a fit of temporary insanity. In this case the cord had been twisted tightly twice round the neck and then tied in a knot!

A case was tried at the Northampton Lent Assizes, 1853 (*Reg.* v. *Gibbins*), which presents some features of interest. The prisoner was charged with the murder of a boy, æt. 8, her illegitimate son. He was alive and well at about 4.30 in the afternoon, at which time he was taking tea with the prisoner and her sister. A little before 8 o'clock in the evening he was found dead in his bed, lying on his back with his arms across the lower part of his chest. A silk handkerchief was tied tightly round his neck, and the bed-clothes were a little turned off him. There was a mark or depression round the neck where the handkerchief had been tied, but no ecchymosis beneath. The brain and its membranes were much congested; the lungs but slightly congested; the stomach contained some food partly digested; the mucous membrane is stated to have been found considerably inflamed (?), and the inflammation extended to the upper part of the small intestines. One medical witness said that, taking into consideration the fact of the handkerchief being found round the neck, and the position of the body, he was of opinion that death was caused by violence (strangulation); and he did not think that the boy could have strangled himself. If he had tied the handkerchief tightly enough to produce strangulation, he could not have returned his hands to the position in which they were found. Another medical witness considered that deceased had died from poison. He formed this conclusion from the extensive inflammation of the stomach and intestines, and from the absence of any other cause sufficient to account for death. He did not think the congestion of the brain was sufficient, nor did he think that the deceased had died from strangulation. There was an absence of the usual mark (ecchymosed?), and the face was pallid; the congestion of the lungs was slight, and there was no blood in the right cavities of the heart. A chemist stated that he had examined the contents of the stomach, but there was no mineral poison; the inflammation of the stomach might have arisen from poison or from natural causes. As the medical evidence entirely failed to prove that the deceased had died from violence, the prisoner was acquitted.

It is not at all probable that in this case the appearances in the stomach were the result of inflammation from irritant poison. Any irritant, mineral or vege-

table, which would have destroyed life in three-and-a-half hours, without causing vomiting and purging, would have been found in the stomach. The partly-digested meal taken at 4.30 when the boy was seen healthy and well, was there found unmixed with any poison. How, and when, was the silk handkerchief tied round the neck? It was not the result of accident, nor could this kind of suicide be suspected in so young a child. The attitude in which the body was found and the age of the child, were adverse to the supposition of suicide. The handkerchief was not tied round the neck after death—there could be no motive for such an act; it must have been tied while the child was living. The absence of any ecchymosis in the course of the ligature is not opposed to this view. The state of the brain appears to show death from apoplexy as a result of an interruption to the cerebral circulation by the ligature. The usual appearances of asphyxia in the heart were wanting. The redness of the stomach was probably owing to congestion, and not to inflammation, and may have been due to the process of digestion going on at the time of death; or it may have been the result of congestion, as observed by Dr. Yelloly in the bodies of executed criminals, and by others in cases of strangulation (*ante*, p. 40). There can be no doubt, considering all the circumstances, that this was a case of homicidal strangulation, the fatal effects being produced chiefly through the brain.

In all cases of fatal strangulation resulting from an act of suicide, the means by which strangulation was produced must be found upon the neck. The condition of the mark on the neck, the course and direction of the cord, the mode in which it was secured or fixed in order to produce effective pressure on the windpipe, the amount of injury to the muscles and parts beneath, are circumstances from which, if observed at the time, a correct medical opinion may generally be formed. If the means of constriction are removed, or the cord or ligature is loosely applied, these facts, unless explained, are presumptive of homicidal interference.

There is another condition in which a presumption of homicide will be justifiable. A man, in strangling himself, is not likely to vary the means. The act is commonly due to a sudden impulse, if we may judge from the moral proofs afforded in the instances on record. The article which is nearest to the suicide is seized, and made the instrument of self-destruction. It has already been stated as doubtful whether a person could strangle himself by the mere application of the fingers to the windpipe: the discovery of such *marks only* as would indicate this kind of strangulation, therefore, renders suicide in the highest degree improbable. But these marks may be sometimes ascribed to the deceased having fallen with his hand possibly applied to his neck, and the inference will be drawn that they have accidentally resulted from the pressure of his own fingers. This is an improbable mode of accounting for the production of ecchymosis or excoriation of the skin in the front of the neck. If, besides these marks of fingers, we find a circular mark, with a ligature still around the neck, the presumption of murder becomes very strong. It may be said that a person might at first try to strangle himself with his fingers, and not succeeding, might afterwards employ a cord. But the degree to which the coincidental impressions exist will assuredly in general remove this objection. A murder was committed many years since in this country in the manner here stated. A gentleman of fortune was found strangled on board of a ship in the port of Bristol. Besides the mark of a rope drawn tightly round the neck, there were distinct impressions of nails and fingers in front of the throat. An investigation took place, and the result proved—as, indeed, this state of the neck rendered it almost certain—that the deceased had been murdered. It was afterwards confessed by one of the murderers that they had first strangled him with their hands, and then drew

the rope about his neck, to ensure the certainty of his death. (See also on this subject 'Ann. d'Hyg.' 1841, 2, 149.)

Imputed homicidal strangulation.—Hitherto the subject of strangulation has been considered in reference to the dead. But a living person may charge another with attempting murder under such circumstances, and here a medical jurist will have the not very arduous duty of detecting and exposing the imposture. It has been considered so improbable that any one would seriously attempt to strangle himself, and then impute the act to another, that medical jurists have given but little attention to this matter. A case tried in France (*Affaire Armand et Maurice Roux*, March 1864) has shown the great importance of it, and how easily medical men may be misled by a plausible story in forming their opinions. As in reference to imputed wounds, so in these cases, impostors rarely produce such injury to themselves as to place their lives in jeopardy. The cord is loose round the neck, or there would be speedy death; it is not so secured as to press with great force on the air-passages, to cause the tongue to protrude, or to produce lividity of the face or neck, or ecchymosis in the conjunctivæ and the skin. It is either a ligature or a rope which is used by the impostor: he does not commonly resort to manual violence to his throat. The marked feature of a really homicidal attempt is in the great amount of violence done to the neck; and the account given by the impostor will be inconsistent in its details, and not reconcilable with the ordinary effects of homicidal strangulation. Tardieu met with a case, in which a young woman of good social position, wishing to excite some public sympathy, alleged that she had been made the victim of a political conspiracy. One evening she was found at the door of her room, apparently in a very alarming state: she could not speak, but indicated, partly by gestures and partly by writing, that as she was entering her room a man had attempted to strangle her by pressing his hand upon her neck, and at the same time had stabbed her twice in the chest with a dagger. On close examination the two stabs were found to have penetrated only to the outer clothing. But the most singular effect of the alleged attempt at strangulation was that, instead of producing a difficulty of speaking and alteration of the voice, it had been followed by complete dumbness! M. Tardieu, who was officially authorized to examine the case, could find on the neck no trace of any attempt at strangulation; and on assuring the young lady that the loss of voice under such circumstances could not last for more than a minute, she at once admitted that there was no foundation for the charge! ('Ann. d'Hyg.' 1859, 1, 163.) On this occasion no person was accused; but the case is different when, for the purpose of extortion or other base motives, one or more persons are charged with an attempt at murder.

A flagrant instance of this kind is that above mentioned, in which a wealthy merchant of Montpellier was charged by his servant, *Maurice Roux*, with having attempted to murder him by strangulation. The case was tried in March 1864, before the Court of Assizes of the Bouches du Rhone; and, fortunately for the interests of justice as well as for the credit of medico-legal science in France, it ended in a complete acquittal of the accused. (*Affaire Armand et Maurice Roux*, Paris, 1864.) 'Relation Medico-légale de l'Affaire Armand,' &c., par A. Tardieu, 'Annales d'Hygiène et de Médecine Légale,' 1864, 1, 415.) On the 7th of July, 1863, at 8 o'clock in the evening, *Roux*, the accuser —a man in the prime of life, and a servant of the accused—was found in a cellar of his master's house stretched on the floor, his feet and hands tied: he was apparently strangled, and, it is said, almost lifeless. Under medical care, in less than three hours he, however, completely recovered. On the next morning (as he professed to be unable to speak) he informed those about him, by signs, that his master came upon him unexpectedly while he was in the cellar, scolded him, *struck him a* severe blow on the nape of the neck

(which knocked him down), attempted to strangle him, and then bound him with cords, and left him on the floor as he was found. These injuries, according to him, were inflicted at half-past eight in the morning, so that on his own statement he had been lying on the cellar floor in a helpless state and unable to give an alarm, for more than eleven hours. M. *Armand* denied the charge, affirming that the whole statement was a falsehood; and certainly no motive could be suggested for such conduct on the part of a gentleman of position and education. No corroborative evidence could be adduced in support of the charge, and it rested simply on the word of one man against the word of another. M. Tardieu, who with other medical experts gave evidence for the defence, has published a summary of the case.

When the accuser was found, he was lying on his left side with his face towards the floor, and his legs were tied with a handkerchief which belonged to the accused—and which, from *Roux's* position in the household, it was very easy for him to procure from his master's wardrobe. His arms were cold,—his head and face of a natural warmth,—the breathing stertorous or loud—the pulse scarcely perceptible, and the eyelid and eye almost insensible. There was around the neck a cord about one-quarter of an inch in diameter: it was coiled three or four times round, and not secured by any knot. There were some marks about the neck, not ecchymosed, and widely separated from each other. There was no injury to the skin, and there were no marks on the neck such as the coils of this cord would have produced had it been applied with any force by an assailant. The cords bound around the legs and wrists were such as any one might apply to himself: they, therefore, require no further notice. As there was no swelling around them, it was obvious that they could not have been applied for upwards of eleven hours, as stated by the accuser, but only within a short time of his being discovered in the cellar.

The time assigned by this man for the malicious assault was fatal to his story. The cord round the neck had not been applied with sufficient force to interrupt respiration in any degree. This was not only proved by the absence of any marks on the neck corresponding to it, but by the circumstance, according to his statement, that he had been in the same position eleven hours. Had this been true, and the cord applied so as to produce imminent symptoms of strangulation as he described, he would have died from the effects within an hour after he had been so maltreated. Men who strangle others either draw a cord tightly, or secure it by a knot. The pressure to the neck is not so gentle as to leave no mark whatever, or to allow the strangled person to breathe and watch all that goes on around him for a period of eleven hours! There was therefore nothing in this man's state but what might have been self-produced: while, on the other hand, all the facts were inconsistent with the supposition of a homicidal attack having been made upon him by another. There was no trace of any blow on the nape of the neck, while the violence described, if really inflicted, would have left some strong evidence of its existence. In the absence of this there was a want of all corroboration of the charge. Although he stated that he was rendered insensible by the blow, yet he was able to observe and describe minutely the proceedings of the accused as to the subsequent strangling, and the binding of his legs and arms. No injury was done to the larynx in any way; yet the man professed to be dumb, and unable to speak. Dumbness is not one of the after-consequences of an act of strangulation from which a person recovers. This was nothing but a continuance of the imposition to excite the sympathy of the public, in which he seems to have been successful. It is highly probable that only shortly before he was discovered, this man had arranged the ligatures about his body. He knew the time at which the cellar would be visited for domestic purposes; and, having *thus bound* himself, he made this charge against his master, probably for the *purpose of extorting money.*

To assert, as some medical men did in support of this palpably false accusation, that a man intending murder by strangulation, might use a cord *gently* for such a purpose and produce no injury to the neck, is equal to affirming that no corroborative medical evidence is necessary to sustain such a serious charge. If this is admitted, no one is safe from an accusation of murder. As a rule, a man intending murder does not half-strangle any more than he half-stabs or half-poisons another. If, as is most improbable in attempted homicide, the cord is left only loosely coiled around the neck, the person assaulted necessarily retains the power of breathing and calling for assistance; but if the hand of a murderer has been at work, it is effectually tightened, and the person dies in a few minutes. A charge of this kind, where there can be no witness but the person making it, requires to be supported, not by medical probabilities or possibilities, but by the strongest medical facts. These ought to show that there are such marks of violence on the neck as an assassin would be likely to inflict, and, at the same time, such as the person making the charge would not be likely to produce, or have the power of producing on himself.

SUFFOCATION.

CHAPTER 56.

SUFFOCATION FROM MECHANICAL CAUSES—VARIOUS FORMS OF—CAUSE OF DEATH—APPEARANCES AFTER DEATH—EVIDENCE OF DEATH FROM SUFFOCATION—ACCIDENTAL SUICIDAL AND HOMICIDAL SUFFOCATION—MEDICAL AND PHYSICAL EVIDENCE OF THE CAUSE OF DEATH—SMOTHERING.

By suffocation we are to understand that condition in which air is prevented from penetrating into the lungs, not by constriction of the windpipe, but by some mechanical cause operating on the mouth and nostrils externally, or on the throat, windpipe, and air-passages internally. In this sense it will be perceived that drowning is one form of death by suffocation, the water being an effectual medium for preventing access of air to the lungs.

The term suffocation is applied to various conditions in which the symptoms and effects differ. There may be a simple privation of air,—the air respired may not be renewed for the want of proper ventilation,—or, lastly, the air which is breathed may be mixed with certain noxious gases or vapours, which by absorption into the blood through the air-cells of the lungs, may destroy life like poisons. The symptoms preceding death, the disposition to recovery, and the post-mortem appearances in fatal cases, will differ under these circumstances. It will be sufficient at present to consider the most simple form of suffocation which is within the reach of experiment,—namely, that which depends on the privation of air by substances blocking up the air-passages, or by the covering of the mouth and nostrils. The Committee of the Medico-Chirurgical Society performed a series of experiments on dogs, in which a tube was inserted into the windpipe, and breathing either took place or was completely arrested, according to whether the tube was kept open or closed by an accurately-fitting plug. When the tube was closed the animal, after a variable number of seconds, made strong efforts to breathe; and when these ceased, unless air was speedily admitted, it died. From nine experiments on the dog, the average duration of the respiratory movements, after the animal had been completely deprived of air, was four minutes and five seconds. The average duration of the heart's action was seven minutes and eleven seconds; and it

further appeared that, on an average, the heart's action continued for three minutes and fifteen seconds after the animal had ceased to make respiratory efforts. In respect to the rapidity with which death takes place in animals, the following conclusions were drawn:—1st, a dog may be deprived of air during a period of three minutes and fifty seconds, and afterwards recover without the application of artificial means; and 2ndly, a dog is unlikely to recover, if left to itself, after having been deprived of air during a period of four minutes and ten seconds. As in drowning, the shorter the interval between the last respiratory efforts and the readmission of air, the greater the chance of recovery. ('Med.-Chir. Trans.' 1862, 45, 454.)

The results of these experiments in reference to the duration of life under privation of air, may be considered applicable to a human being. It is not likely that a man would survive under these circumstances longer than a dog, and it may be fairly inferred that the life of a man would be destroyed in from four to five minutes after the power of breathing had been completely arrested.

There are many varieties of death by suffocation, all of which are of great medico-legal interest:—1. The close application of the hand over the mouth and nostrils, or the placing of a plaster or cloth over these parts, combined with pressure on the chest: this was formerly not an unfrequent form of homicidal suffocation. 2. Smothering, or the covering of the head and face with articles of clothing, &c., which effectually prevent breathing. 3. The accidental or forcible introduction of foreign bodies into the mouth and throat. 4. The flow of blood into the windpipe from a severe wound in the throat, or from the bursting of a blood-vessel or aneurismal sac. 5. In wounds of the throat, when the windpipe is completely divided, the lower end may be so drawn into the wound as to produce a closure of the orifice, and intercept the passage of air. One or other of these causes frequently operates to render a wound in the throat fatal. 6. The plunging of the face into mud, snow, dust, feathers, or similar substances. In all these cases death takes place from asphyxia, and with great rapidity if the chest sustains at the same time any degree of forcible compression. 7. Swelling or spasm of the glottis produced by the contact of corrosive substances. A case was referred to me, in July 1848, in which death was probably thus caused by the application of a strong solution of pernitrate of mercury to an ulcer in the throat.

Suffocation from mechanical causes.—Suffocation may arise from morbid causes, such as a diseased state of the parts about the throat, an enlargement of the glands, the bursting of a tonsillary abscess, or the effusion of lymph, blood, or pus into the windpipe, or about the opening of the larynx (rima glottidis). Any of these causes may suddenly arrest the act of breathing, a fact which can only be determined by a proper examination of the body. Among many cases of death from suffocation produced by mechanical causes, which have been reported, the following are deserving of notice:—1. A boy died in half-an-hour under alarming symptoms somewhat resembling those of poisoning, and it appeared that a simple medicinal powder had been given to him about five minutes before the attack! On inspection Dr. Geoghegan found the lower part of the windpipe blocked up with cheesy scrofulous matter: it was evident that the child had died from suffocation as a result of disease, and not from the medicine. 2. The following case was communicated by Mr. Edwardes to the Medico-Chirurgical Society:—A child of eight years of age, while at play, was suddenly seized with symptoms as of a fit. He was quickly carried home, and became violently convulsed. Although retaining consciousness and speech, his countenance was extremely anxious, and he uttered the expression that he should die. In the hurry of the moment there was no opportunity of getting any distinct knowledge of the previous history, beyond *the surmise* that the boy had swallowed something. The windpipe was im-

mediately opened: a little air issued from the opening: artificial respiration was attempted, but without effect, as the child gave but two gasps after the operation, and died. An inspection revealed the presence of a foreign body in the upper part of the air-passages. The substance was whitish, and covered with mucus: on examination it was found to be a bronchial gland. Upon slitting open the windpipe the spot whence the gland had issued was perceived. 3. A man, æt. 31, was put to bed drunk, having previously vomited; and shortly afterwards he was found dead. On inspection Dr. Jackson of Leith discovered the usual appearances of asphyxia, *i.e.* congestion of the lungs and of the right cavities of the heart. He was thus led to examine the air-passages carefully, and he found lying over the upper opening of the windpipe (rima glottidis), a thin and transparent piece of *potato-skin* so closely applied to the fissure as to prevent breathing. The man had died, accidentally suffocated from this mechanical cause. He had had potatoes for dinner the day before; the piece of skin had probably been thrown up at the time of vomiting, and had been drawn back by inspiration into the singular position in which it was found. Owing to intoxication, the deceased was unable to cough it up. I agree with Dr. Jackson in thinking that this case conveys a caution in making inspections. In England the verdict would most probably have been, 'Died by the visitation of God,' without an examination of the body! The result clearly shows that in every case of sudden death there should be a strict investigation. ('Ed. Med. and Surg. Journ.' April 1844, p. 390.)

Mr. Nason communicated to me a case (Sept. 1860), in which a child seventeen months old died suddenly during a violent fit of coughing. On a minute inspection to determine the cause of death, a full-grown pea was found firmly fixed in the larynx, between the cricoid and thyroid cartilages, blocking up the air-passages. It was probable that it had been in the air-tubes some time, as there was muco-purulent matter effused, and under a sudden fit of coughing it had been thrown into the position in which it was found, thereby causing death by suffocation. Dr. Richardson met with a case of death from suffocation caused by the vomiting of the contents of a full stomach, a portion of the food having blocked up the throat. A case similar in its details occurred to Mr. Matthews. ('Lancet,' Aug. 31, 1850, p. 262.) Children are often suffocated from small portions of solid food penetrating into the air-passages; and unless an inspection of these parts is made, death may be easily referred to some natural cause. (See case by Mr. Synnott, 'Med. Gaz.' vol. 40, p. 994; also 'Lancet,' May 16, 1846, p. 561.) In some instances a retraction of the base of the tongue may lead to the suffocation of a new-born child. ('Seller's Journal,' March 1854, p. 278.) Accidental suffocation from the impaction of large masses of food is by no means uncommon. If the glottis (the opening of the windpipe) be completely closed by food, death may take place suddenly. It does not follow, however, that a person so situated is incapable of making some exertion or of moving from the spot. Dr. Mackenzie relates a case in which a man was suddenly choked by swallowing a large piece of meat: he immediately walked across the street to a chemist's shop, and soon after entering it he fell down in a state of insensibility. After death the throat was found to be filled with a piece of beef, which rested on the glottis, and had pressed the epiglottis forward. Part of the mass had entered the windpipe through the rima glottidis, and had thus caused death by suffocation. It is probable that, in this and similar cases, the foreign body does not so completely close the aperture as to prevent some degree of respiration, but the blood being imperfectly aërated, asphyxia is speedily induced. ('Ed. Month. Jour.' July 1851, p. 68.) In a case which occurred in April 1858, a youth, æt. 17, lost his life owing to an oyster becoming impacted in the air-passages during the act of swallowing. In another, death was caused by a piece of potato which was

found fixed in the trachea. ('Ann. d'Hyg.' 1867, 1, 461.) In 1870 sixty deaths from suffocation by food were registered in England.

A person has been wrongly charged with causing the death of another, when the cause was really owing to an accidental impaction of food in the larynx. A remarkable instance of this kind (which is reported in the 'Lancet' for March 9, 1850, p. 313) occurred at Hillingdon. Deceased had had a quarrel with the accused, who was his son-in-law, and they were seen to fall to the ground together, while struggling and fighting. They were separated. About two hours afterwards the deceased, who appeared quite well, was observed to rise from the dinner-table and leave the room. He was found leaning against the cottage, as if in a falling position, and he expired in two or three minutes! The man with whom deceased had been fighting, was charged with manslaughter before a magistrate. At the inquest the medical witness stated that he found the organs of the body, excepting the brain, in a very healthy state. The brain was excessively congested, and he attributed death to apoplexy. The coroner desired the witness to examine the mouth and throat (which he had omitted to do at the inspection), as from the suddenness of death after eating, he (the coroner) thought the man might have been choked. This opinion turned out to be correct. A large piece of meat was found wedged in the opening of the throat; this had caused death by suffocation. It had not completely closed the air-passages in the first instance: hence the man was able to move from the dinner-table. The person accused of manslaughter was discharged. Dr. Lewin describes a case in which a soldier was found dead in his cell two hours after he had been confined. On inspection it was found that a large piece of potato was impacted in the air-passages, completely preventing respiration. ('Vierteljahrsschrift,' 1866, 2, 342.)

A person may die suffocated, not from the act of swallowing food, but by reason of part of the contents of the stomach finding their way into the air-passages. Two cases are quoted at p. 83 *ante*. Whenever vomiting is followed by an inspiration while the vomited matters are in the mouth, the food is very liable to be drawn into the trachea, bronchi, and pulmonary cells, and to cause suffocation. Pressure on the body may have the same effect as the act of vomiting. A man was struck several blows with the fist, he was then stabbed in the nape of the neck, and finally his body was trampled on by his assailants. He died before any assistance could be rendered. On inspection the air-passages were found to contain a large quantity of pulpy matter such as existed in the stomach. The wounds received were only flesh wounds, no large blood-vessel having been injured. Nevertheless one expert attributed death to loss of blood from the wounds—another assigned it to asphyxia from the food vomited by the deceased passing into the lungs during an inspiration. MM. Engel and Hauska were able to prove that asphyxia was the cause of death, and that the assailants were responsible. The food had been forced into the fauces by the act of trampling on the body. ('Ann. d'Hyg.' 1868, 1, 450, and 2, 226; and 1869, 1, 471.)

This mode of death by suffocation, as a result of violence to the abdomen, is probably more frequent than it is commonly supposed to be. It is likely to occur in the maltreatment of drunken persons. Dr. Behrend has reported a case of this kind in which suffocation was caused by the aspiration of food, with a full account of the post-mortem appearances, in Horn's 'Vierteljahrsschrift,' 1868, 1, 123.

A medical jurist, however, must not lose sight of the fact that a foreign substance may be *homicidally* forced into the larynx, and that, except by a careful examination of the body, death may be wrongly assigned to accident. A case reported by Dr. Littlejohn is in this respect instructive. In examining the body of a woman who it was stated had died suddenly, he found a quart-bottle cork

inserted tightly into the upper part of the larynx. The sealed end was uppermost, and was roughened by the passage of the screw. Fractures of the ribs were found, and it was quite clear that deceased had not died a natural death. It was suggested that the deceased, while extracting the cork from the bottle with her teeth, might, by the sudden impetus of the contained fluids, have drawn it into the position in which it was found. But this theory was negatived by the sealed end of the cork being found uppermost in her throat, as well as by the structure of the parts. The medical opinion was that the cork must have been forcibly placed there by another person, while the woman was in a helpless state of intoxication. There was no reason to doubt that this was a deliberate act of murder. Five persons were present with the deceased at the time of her death, but it was impossible to fix with certainty upon the person who had committed the act, and the man on whom the strongest suspicion fell, was acquitted on a verdict of 'not proven.' ('Ed. Med. Jour.' Dec. 1855, p. 511; and for a report of the trial, the same journal, p. 540.) In September 1872, a man was charged with causing the death of a child by administering to it a large quantity of pepper in powder. (*Reg.* v. *Spaul*, C.C.C.) From the medical evidence it appeared that death had been caused by suffocation, as the air-passages were choked up with it. The prisoner had used a pepper-castor, and the top came off, so that about half an ounce of pepper had found its way into the throat and air-passages of the child. The prisoner was convicted of manslaughter.

Cause of death.—Treatment.—It has been already stated that death takes place by apnœa or asphyxia; and this occurs with a rapidity proportioned to the degree of impediment existing to the passage of the air. There does not seem to be any reason to attribute death to apoplexy. The congestion of the cerebral vessels may be regarded as a consequence of the disturbance of the functions of the lungs. If the veins of the neck were opened, so as to prevent an accumulation of blood in the vessels of the brain, it is pretty certain that the prevention of respiration would destroy life under the same circumstances, and within the same period of time; therefore we may regard death from suffocation as resulting from pure asphyxia.

In *treating* cases of suffocation we have simply to allow of the renewal of air by removing, if this be possible, the obstacle to respiration. The results of experiments on dogs show that, even with a perfect closure of the windpipe, an animal may recover spontaneously after nearly *four minutes'* deprivation of air; and there is every reason to believe that a human being might recover after the same length of time. If five minutes have elapsed there will be but little hope of recovery. Cold affusion to the chest should be used if efforts at respiration are not made spontaneously on the removal of the obstruction.

As it has been elsewhere stated, the chances of recovery in drowning continue only for half the period observed in suffocation. The lungs are injured, and the water by which they are penetrated, forms a physical obstacle to the free admission of air. In hanging and strangulation there is sometimes great violence done to the parts about the neck. In suffocation these accidental obstacles to recovery do not exist: the surgeon has simply to re-admit the air into the lungs. All experiments go to show that, even in this form of asphyxia, which is most favourable for recovery, the complete suspension of respiration for *five minutes* is fatal. Hanging and strangulation prove fatal from asphyxia in the same period of time, and drowning probably within half this period.

Post-mortem appearances.—There are rarely any considerable marks of violence externally. When the body has become perfectly cold, there may be patches of lividity diffused over the skin; but these are not always present. In a set of cases examined by M. Tardieu, the skin of the face, neck and shoulders presented dotted or punctiform ecchymoses. ('Ann. d'Hyg.' 1866, 2, 346.) The lips are *livid; the skin of the face* and neck may be pale, or present a

dusky-violet tint. The eyes are congested: there is a mucous froth about the lips and mouth. The mouth, throat, and parts about the windpipe should be carefully examined for foreign substances. Internally the lungs and right cavities of the heart may be found distended with blood. The state of the lungs and heart is, however, subject to variation. The lungs are not necessarily found congested; and sometimes, as in a case referred to me in November 1864, one lung may be found congested and the other not. M. Tardieu states, from his observations, that the *lungs* are of a reddish colour, sometimes even pale, not distended, and presenting, occasionally, only a slight degree of congestion at the base and posteriorly. A special character which he states he has invariably noticed, consists in the presence of small ecchymosed spots or patches beneath the pleura or investing membrane (punctiform or subpleural ecchymoses). He describes these spots as of a dark colour, and varying in size from a pin's head to a lentil. In the adult they are of still larger size. Their number is variable; sometimes five or six may be found, at others twenty or thirty; and in other cases the surface of the lung may be so studded with them as to give to it a granite-like appearance. These spots of ecchymosis are sometimes agglomerated, at other times separated, but their outline is generally distinct and well-defined on the surface of the lungs. They are most frequently seen at the root of the lungs, at its base, and about its lower margin. They are owing to small effusions of blood from ruptured vessels, like true ecchymosis. They may be distinguished so long as the tissue of the lung remains unchanged. A similar appearance is also presented by the pericardium. M. Tardieu states that he has seen these subpleural ecchymoses in the body of an infant, ten months after death. ('Ann. d'Hyg.' 1855, 2, 379.) He admits, however, that they may also be found in the bodies of children that have not breathed; hence no inference of death from suffocation should be drawn from this appearance in the lungs of children, unless they have actually received air. In three instances he met with this appearance in lungs which sank in water, and had all the usual characters of these organs in a fœtal state. The children had been born living, prematurely, and under conditions in which life by respiration could not be perfectly established: one of them had made several cries without effectually receiving air into the lungs (loc. cit.) (See Casper's 'Klinische Novellen,' 1863, p. 471.) This struggle to breathe may have produced an appearance resembling the effect of suffocation. In new-born children that die from suffocation, the thymus-gland has been found in a similar condition.

M. Liman disputes the accuracy of the observations of M. Tardieu regarding this appearance in death from suffocation. ('Ann. d'Hyg.' 1867, 2, 388.) According to Dr. Ogston, the subpleural or punctiform ecchymoses described by Tardieu as specially indicative of death by suffocation, were not present in the cases of nine adults who had died from this form of asphyxia. ('Brit. Med. Jour.' Sept. 1868.) On the other hand, they have been found in cases in which death had taken place from different causes. Too much reliance must not therefore be placed on their presence or absence. These spots of ecchymosis were found by Dr. Ogston not only on the surface of the lungs, but on the heart, the scalp, the pericranium, the thymus-gland, and other parts. (See 'Ann. d'Hyg.' 1868, 1, 104.) That they are frequently absent in death from suffocation is shown by the observations of different medical jurists. (See paper by Ssabinski, 'Vierteljahrs.' 1867, 2, 146.) In an elaborate paper, published in the same journal, Dr. Lukomsky of Kiev has endeavoured to show, by a variety of experiments, the circumstances under which we may expect to find these ecchymoses in death from suffocation, and the cases in which they are likely to be absent. (Eulenberg, 'Vierteljahrsschrift,' 1871, 2, 58.)

The dotted appearance of the surface of the lungs in suffocation when it exists, is not attended with the apoplectic effusions in their substance which

have been met with in death from strangulation. Emphysema, or escape of air from rupture of the air-cells, is occasionally observed. The more rapidly suffocation has taken place the more strongly marked is this appearance of the ecchymosed spots. On the other hand, when the interruption of breathing has been slow and gradual, the substance of the lungs is more congested with blood, and then these dots or patches are merged in the general violet colour of the surface of the organs. The lining-membrane of the windpipe and larger air-tubes is sometimes pale, but more commonly, when the lungs are much congested, reddened or dark-coloured. In the air-passages there is occasionally a frothy reddish-coloured liquid in small vesicles.

The *heart* presents no special appearance indicative of the mode of death, if we except the presence of small spots of ecchymosis found below the investing membrane, like those met with on the lungs. They have been found near the roots or origin of the great vessels, and on the heart, but are not so frequently observed in this organ as in the lungs. The blood is generally dark-coloured, and very liquid. It does not readily coagulate. Thus it happens that any wounds made after death in the bodies of persons suffocated, bleed more and for a longer time than in other cases. See a paper on the appearances in death from suffocation by Prof. Skrzeczka in Horn's 'Vierteljahrsschrift,' 1867, 2, 187.

The stomach and intestines have been observed to present patches of lividity. Casper has found the kidneys more strongly congested with blood than the liver, spleen, and other organs. ('Ger. Leich.-Oeffn.' 1853, 1, s. 78.) Ssabinski states that he has found the spleen in an anæmic condition; *i.e.* containing very little blood. ('Vierteljahrsschrift,' 1867, 2, 146.) The vessels of the *brain* are sometimes congested, but at other times they do not appear to be more than ordinarily full. Their condition may be affected by the congested state of the lungs, as well as by the slowness or rapidity with which death takes place. Other appearances which have been described are of an accidental nature, and are not connected with death from suffocation. (See cases by Casper, 'Med. Gaz.' vol. 44, p. 1084; also a series of papers by Dr. B. W. Richardson, 'Med. Gaz.' vol. 47, p. 359 *et seq.*)

In a case of alleged murder by suffocation, respecting which I was consulted in December 1857, the following appearances were met with. The body was lying on the bed: the right leg was drawn up towards the body—the right arm was bent, with the hand directed towards the face; the left hand was lying upon the chest. The lips were livid, the tongue protruded and swollen, and there was a bloody fluid issuing from the nostrils. There was no mark of constriction on the neck; the eyes were half-open; the body was rigid and still warm. The face and neck were much swollen, and the skin of these parts, as well as of the chest, abdomen, arms, and legs, was covered with dark livid patches. The brain was gorged with venous blood. The heart was soft and flaccid, and its cavities were empty. The mucous membrane as well as the tissues of the air-passages were much congested with dark liquid blood: the blood was everywhere liquid. The stomach contained a small quantity of a dark-coloured liquid, and the greater end was reddened. The spleen was congested. The emptiness of the cavities of the heart was at first considered to be inconsistent with death from asphyxia; but this condition of the heart is occasionally found. It may be stated that in this case the deceased, a woman, was greatly exhausted by sickness and purging. On the second day of her illness she was found dead in the state described, and her husband was charged with having suffocated her.

Evidence of death from suffocation.—In medical jurisprudence there is not, perhaps, an instance in which we have fewer medical data upon which to base an opinion than in a case of alleged death from suffocation. The inspection

of the body of a person suffocated, presents so little that is peculiar, that a medical man, unless his suspicions have been roused by circumstantial evidence, or by the discovery of foreign substances in the air-passages, would probably pass it over as a case of death without any assignable cause—in other words, from *natural causes*. Dr. Liman, of Berlin, after the examination of numerous cases, has come to the conclusion that there is no anatomical appearance in any of the organs which can be considered as characteristic of this mode of death. The punctiform ecchymoses on the lungs and heart described by Tardieu cannot be treated as absolute indications of this mode of death. (Horn's 'Vierteljahrsschrift,' 1868, 1, 278.) In examining the body of the woman *Campbell*, who was suffocated by *Burke* in Edinburgh (1829), Dr. Christison was unable to come to a conclusion respecting the cause of death until some light had been thrown on the case by collateral evidence. On this occasion a violent death was suspected, because there were marks of violence externally, and the face of the deceased presented some of the characters of strangulation. These conditions, however, are by no means essential to death from suffocation, and when they exist they can only be regarded as purely accidental accompaniments. Appearances similar to those found in the bodies of suffocated persons, if we except the dotted ecchymoses on the lungs, are frequently met with in inspections when death has taken place as a consequence of disease or accident. They can, therefore, furnish no conclusive evidence of the kind of death; they scarcely permit a witness to establish a presumption on the subject, until, by a careful examination of the body, he has ascertained that there is no other cause of death depending on organic disease or on violence. Medical evidence may, however, be serviceable in some instances. Thus, let the general evidence establish that a deceased person has probably been suffocated, the witness may have it in his power to state that the appearances in the body are consistent with this kind of death; that the body is in all respects healthy and sound, and that death was probably sudden—as where, for instance, undigested food is discovered in the stomach. The presence of ecchymoses on the surface of the lungs may justify a strong opinion of death by suffocation when no other cause is apparent. In all cases of this description, we must bear in mind that an opinion relative to the supposed cause of death is to be formed from the *medical* circumstances, and from what we have ourselves seen, unless it be otherwise allowed by the Court. From this want of clear evidence, great difference of opinion on the cause of death frequently exists among medical witnesses. In *Reg.* v. *Heywood* (Liverpool Summer Assizes, 1839) some of the witnesses referred death to suffocation, others to apoplexy. ('Lancet,' Sept. 14, 1839, p. 896.)

Accidental suffocation.—Accidental suffocation is not unfrequent; and there are various conditions under which a person may die suffocated only discoverable after death. 1. Diseases about the tongue, larynx, or throat may have advanced to such an extent as effectually to prevent breathing. 2. The deceased may have fallen, and the mouth become covered with dust or other substances; and if helpless, as in the case of an infant or an aged person, or of one who is intoxicated, death may thus easily take place. A child was found dead in a room, with its face in the ashes under a grate: it had fallen during the absence of the mother, and, from its helpless condition, had speedily become suffocated. Some of the ashes were found in the windpipe. ('Med. Gaz.' vol. 17, p. 642.) For a case in which suffocation was caused by a pea, see the same journal, vol. 29, p. 146. In trials for murder or manslaughter, a medical opinion respecting the accidental suffocation of a drunken person, under similar circumstances, is occasionally required. These persons, it must be remembered, are generally as helpless as children: if they fall in a position so that the mouth is covered, they may be so powerless from intoxi-

cation as not to be able to escape. 3. A portion of food may have remained fixed in the larynx or throat. Children are sometimes accidentally suffocated by drinking boiling water from a tea-kettle. The parts about the larynx then become swollen from the action of the hot water, and breathing cannot take place. 4. Accidental suffocation is not uncommon among infants, when they sleep with adult persons. A child may be in this way speedily destroyed. Even the close wrapping of a child's head in a shawl to protect it from cold may effectually kill it, without any convulsive struggles to indicate the danger to which it is exposed (p. 92). Convulsions by no means necessarily attend on death from suffocation.

A coroner's inquest was held on the body of a child found dead in bed; and I assisted a friend in making an inspection of the body. It was lying in a composed attitude on the bed, with the face nearly covered. There were faint traces of cadaveric lividity about the neck and back; but the body did not present the least mark of violence. The face was pale, but the lips were livid. On examining the chest, the great vessels connected with the heart and lungs were found congested with blood. The vessels of the brain were empty. There were no morbid appearances whatever in any of the other organs. The account given by the girl who attended the child was, that she had laid it down to sleep about nine o'clock in the morning, covering over the greater part of its face. She remained in the room; but in the course of an hour, not hearing the child breathe, she looked, and found it dead. The only opinion which we were asked to give was—whether, from the circumstances, suffocation was probable? We answered in the affirmative; and a verdict of 'accidental death' was returned. This case shows the ease with which an infant may be destroyed, even when its respiration is only partially impeded. The weight of the clothes may have combined to cause death by preventing the free expansion of the chest.

Those instances of accidental suffocation which depend on disease or on the impaction of food, are easily detected by an examination of the body: generally speaking, they present no difficulty. (See cases, 'Med. Gaz.' vol. 42, p. 970; also 'Lancet,' Sept. 2, 1848, p. 259.) But in other instances, *e.g.* when a child or a drunken person is presumed to have been suffocated owing to the position of the body, the actual sight of the body, or a correct drawing of the attitude in which it is found, is necessary before forming an opinion. The following questions may here arise:—Was the position such as to be explicable on the supposition of accident? Was it such a position as might have been given to it by a murderer? Could not the deceased have had strength or presence of mind to escape? Could he have been actually suffocated in the position in which his body was discovered? A little reflection upon the circumstances—for here something more than *medical* facts will be required—may enable a witness to give satisfactory answers to these questions.

A remarkable instance of accidental suffocation was communicated to me by a former pupil, Mr. Rake. A groom was found dead, with his head downward, in the iron rack used for feeding horses with hay. His legs projected from the hole in the floor above. The space was so narrow that there had been no room to turn, and there was no fulcrum by which the deceased, who had thus fallen head downwards into the hole, could again raise himself. There was no doubt that, in reaching into the hole, the deceased had accidentally fallen headforemost into the rack in the midst of the hay, and he had died in this position, without the power to raise an alarm or to make any successful effort for his extrication. It is possible that homicide might be committed in this manner; but there was no reason to suspect it in this instance. Singular accidents may lead to death by suffocation, in cases in which, unless the collateral circumstances were known, homicide might be inferred. A man was engaged in shooting flour from the upper to the lower part of a granary: he fell through the trap-

door, and a large quantity of flour fell with him and covered him. Nothing was known of the accident until his dead body was taken out below; it was then found that his mouth and nostrils were completely filled with flour, and that he must have been accidentally suffocated. A policeman running along a road with two companions suddenly stumbled and fell forwards, with his head in the road and his feet and legs on the pathway. As he did not rise his companions went to his assistance and found him insensible. He was taken to St. George's Hospital, and he was then pronounced to be quite dead. On inspection it was found that the glottis (windpipe) was obstructed by three false teeth, which had been only lately put in: this obstruction had led to suffocation and death. Other cases are recorded in which suffocation has been caused by false teeth becoming displaced and falling back into the throat during sleep, in persons who had worn them during the night.

Suicidal suffocation—As an act of *suicide*, suffocation is extremely rare. It would require a peculiar adaptation of means and considerable resolution, in order that a person should thus destroy himself. The following case occurred in France some years since:—A woman locked herself in her room with her young child; she placed herself under the bed-clothes, and desired the child to pile the several articles of furniture in the room upon the bed. When the apartment was entered, some hours afterwards, the woman was found dead; she had evidently been suffocated. Had not the child clearly detailed the circumstances, a strong and even a justifiable suspicion of murder might have arisen. In the Registrar-General's return for June 9, 1864, a woman is reported to have destroyed herself by leaning with her mouth against the bed-clothes; she died from suffocation. In the case of a body found with a plaster covering the mouth and nostrils, or the traces of such having been applied, a medical witness might be asked whether this could have been so placed by the individual himself? No such case is reported to have occurred as an act of suicide, but we are not, therefore, to say it is impossible: all that we are justified in stating is, that it is a highly improbable mode of self-destruction.

Some singular cases are on record, in which persons have wilfully destroyed themselves by blocking up the throat mechanically. An instance of this form of suicide is reported in the 'Edin. Med. and Surg. Jour.' April 1842. A woman confined in prison forced a hard cotton-plug into the back of her throat. The cavities of the chest and abdomen had been already examined, and a medical certificate given that the deceased had died of apoplexy! The body was sent to one of the anatomical schools, and on re-inspection it was accidentally found that the throat was firmly blocked up with a plug of spindle cotton. A similar case was the subject of an inquest in London, in September 1843. The deceased here had thrust into her throat a large piece of rag, which had been used in applying a lotion. She speedily died suffocated, and after death the rag was found lodged at the back part of the throat. A case occurred at Maidstone in July 1856, in which a man confined as a prisoner in a cell is reported to have committed suicide by suffocation. He was found lying on his face, dead. He had thrown his bed on the floor, filled his nostrils with pieces of rag, his mouth with a handkerchief, and had tied another handkerchief over his mouth, after which he must have thrown himself down upon his face. Some of these cases are likely to be mistaken for apoplexy, and they certainly show the absolute necessity for a careful examination of the mouth and air-passages in every instance of sudden death. (See 'Edin. Med. and Surg. Jour.' vol. 54, p. 149; also 'Med.-Chir. Rev.' vol. 28, p. 410.)

Homicidal suffocation.—Homicide by suffocation is not very common, although it is a ready means of perpetrating murder. Hitherto the cases which have come before our Courts of law have been those either of infants, of the aged and infirm, or of persons enfeebled by illness. In regard to the latter,

the rigorous administration of the law has succeeded in putting a check to this crime; but with respect to children, it probably yet continues. Death by suffocation is most difficult to detect; and, unless the assailant has employed an unnecessary degree of violence, it is probable that the crime may pass altogether unsuspected. One case is elsewhere reported, in which a plug of dough had been forced into the larynx, and had caused death. The case of *Reg.* v. *Heywood* (Lancaster Summer Assizes, 1839) proves how easily a defence of apoplexy may be sustained in a case of alleged murder by suffocation.

Homicide by suffocation would not be attempted on healthy adult persons, unless they were in a state of intoxication, and thereby rendered defenceless. It is certain that most individuals would have it in their power, unless greatly incapacitated by disease or intoxication, to offer such a degree of resistance as would leave upon their bodies indubitable evidence of murderous violence. Death by suffocation may be considered as presumptive of homicide, unless the facts are clearly referable to accident. Accidental suffocation is, however, so palpable from the position of the body and other circumstances, that when death is clearly traced to this cause, it is not easy to conceive a case in which it would be difficult to distinguish it from one of actual murder. In some instances the very means that have been adopted to produce suffocation may forbid the supposition of accident, and clearly establish the fact of homicide.

M. Devergie has reported a case, in which a man was suffocated by having his face forcibly thrust into a heap of corn. A quantity of the corn was found blocking up the mouth and nostrils, and some of the grains had passed into the air-passages (drawn into them by forcible aspiration), as well as into the stomach by swallowing, and even into the duodenum. That violence had been used was proved by the marks of indentations produced by the grains of corn on the face, as well as by excoriations (indicative of resistance) on the hands. The facts were quite inconsistent with the supposition of suicide or accident; yet the jury declined to accept the medical opinion, that the deceased had been homicidally suffocated. ('Ann. d'Hyg.' 1852, 2, 195.) The presence of the grains of corn in the duodenum is not easily to be explained, considering the rapidity of death from suffocation, and that they could not be carried to the small intestine either by aspiration or deglutition. The power of aspiration in the chest is exceedingly great (p. 19 *ante*), and drunken or helpless persons may, by falling in the midst of dust, ashes, or other substances, easily draw a portion of these substances into the air-passages, and thus die by suffocation; but this effect of aspiration will not account for the passage of such substances into the stomach and bowels. In the journal above referred to, M. Devergie mentions the case of a man who fell asleep near some sheaves of corn. He was found dead, and the cause of death was obviously asphyxia; an ear of corn was found fixed in the air-passages.

The suffocation of new-born children by the introduction of substances into the mouth is not unfrequent. (See INFANTICIDE.) The unnecessary force employed generally leaves traces of violence, which may be easily discovered by a careful examination, even should it happen that the substance used for the murderous purpose has been removed. M. Devergie has suggested an objection to evidence founded on a fact of this nature, that the substance might have been introduced soon after death, in order to create a suspicion of infanticide against the mother; but such an objection could hardly be received, and the fact would be only one out of many brought against an accused person. According to Devergie, the appearances produced by the introduction of a plug of linen into the mouth *during life* are these:—The mouth contracting posteriorly, the pressure would be greater in this situation; consequently the blood would be forced out of the compressed mucous membrane of the palate. *In the fore-part the* pressure would be less; and here

the blood would accumulate, so that the mucous membrane in this situation would become swollen and red. In trusting to these characters, it must be remembered that similar appearances would probably result if the plug were introduced immediately *after death*, as also that, even when introduced during life, the characters might be lost if the plug were removed from the mouth before the body had entirely cooled.

It is necessary to point out a dangerous practice common among ignorant nurses, which, without exciting suspicion on the part of a coroner or medical witness, may be an occasional cause of death in infants. In order to quiet a child, and to enable a nurse to sleep without disturbance, a bag made of wash-leather or rag, containing sugar, is thrust into the child's mouth. It is thus completely gagged, and the child soon becomes quiet, respiring chiefly through the nostrils. If these by any accident become obstructed, or by the act of respiration the bag should fall to the back of the throat, death by suffocation must inevitably result, the infant being perfectly helpless! The suspension of respiration may be so gradual that the child may die without crying or convulsions. The removal of the bag from the mouth would of course remove every trace of the cause of death; and, in order to exculpate herself, the guilty person may ascribe death to 'fits.' In one instance, within my knowledge, an infant was timely saved by the mother having discovered, while the nurse was sleeping, a mass of wash-leather projecting from its mouth. The woman awoke, and attempted to remove and conceal the leather, but she was detected in the act. The detection of this dangerous practice can only be a matter of pure accident: hence a fatal case can be rarely the subject of a coroner's inquest, and even then medical evidence may fail to throw any light upon the cause of death. In one instance only have I known it to give rise to a criminal charge—(*Reg.* v. *Cox*, Warwick Lent Assizes, 1848). The mother, a pauper, was tried for the attempt to suffocate her infant, eleven days old. The child was discovered by another person with a piece of rag hanging from its mouth. It was livid in the face, but when the rag was removed, it made a violent gasp, and recovered its breath. There was no malice on the part of the prisoner, but it was made a strong point in her favour that instances had occurred in the workhouse in which women had with impunity put rags with sugar into the mouths of infants, in order to soothe and keep them quiet! The jury acquitted her. The admitted practice of infantile suffocation in the Warwick workhouse appears to have passed without reprimand or even comment, although this plan of soothing infants is just as likely to be fatal to them as that of encircling their necks with tight ligatures.

SMOTHERING.

Smothering is a variety of suffocation, and consists in the mere covering of the mouth and nostrils in any way so as to prevent the free ingress and egress of air. Like drowning, hanging, or strangulation, it produces death by asphyxia. In new-born infants it is not an unusual occurrence, sometimes originating in accident, and at others in criminal design. An infant may be speedily destroyed by smothering. If the mouth be only lightly covered with clothing, or slightly compressed, so that respiration is interrupted, as in the act of carrying a child in the arms, this will suffice to cause death; and, as it has been already remarked, death may take place without being preceded by convulsions or other striking symptoms. Smothering is not often resorted to as a means of perpetrating murder, except in infants, or in debilitated and infirm adults. In a case which occurred at Ayr, a woman was charged with the murder of her child by smothering it in her shawl. She was travelling in a steamboat: it

was a cold stormy day, and she had wrapped the shawl closely round the head of the child. There could be no doubt, from the moral circumstances, that she had intended to kill it; but the defence was that she had merely intended to protect the child from the cold, and it was suffocated before she was aware of it. There were no facts to exclude this defence, and the woman was acquitted. I have known an instance in this metropolis in which an infant was unintentionally destroyed by the close wrapping of a shawl round its head. In December 1852 Mr. Thornley of Blyth, Nottinghamshire, consulted me in a case in which an infant was found dead in bed. It was a perfectly healthy child, about three months old. It had been left by the nurse in bed quite well in the morning when she got up. A quarter of an hour afterwards the father went into the room and could not see the child; but on removing the bed-clothes he found it beneath them, quite dead, its head covered completely by six folds of clothes. The body was quite warm (showing recent death), the countenance was calm, the limbs were relaxed: there was a little frothy mucus about the mouth, but nothing to indicate a violent death. There was no doubt, from the circumstances, that the child had been accidentally smothered or suffocated: its body had slipped down beneath the clothes, the mouth and nostrils were covered,—asphyxia speedily came on, and this proved fatal owing to the helplessness of the infant. According to the late Mr. Wakley, as a result of his experience as coroner, infants were frequently found dead owing to their being suckled at night while the woman was in bed. The child's face is pressed on the breast; mother and child fall fast asleep; the head slips beneath the clothes, and the child is then quietly suffocated. There is no mark of pressure on the body. ('Lancet,' Jan. 16, 1858, 69.) A case, apparently of this kind, was communicated to me by Mr. Nason in Sept. 1860. The child (five days old) died quietly on its mother's arm while lying in bed. There was much lividity about the head, neck, and back; but there were no marks of violence. The bronchial tubes of the right lung contained bright florid blood. The left lung was gorged with blood, but none had escaped. The heart was firmly contracted, and there was only a small quantity of blood in its right cavities.

According to the returns of the Registrar-General, suffocation in bed from 'overlaying' is the most frequent cause of violent death among infants. In ten years (1858-67) the total deaths registered in London from this cause was 3,612, or 361 per annum; and 2,070 in the five years (1863-7), or on an average 414 per annum. Infants are readily smothered by the bed-clothes accidentally covering the mouth and nostrils, and they have not the power to change their position. Dr. Lankester states that he had within a short period held two hundred inquests on the bodies of children thus found suffocated in bed. In a return of inquests held in Liverpool in 1864, it appeared that out of 960 inquests there were 143 on infants and children who had been suffocated, chiefly between the Saturday and Monday of each week.

In November 1848 Mr. Canton communicated to the Westminster Medical Society an account of the appearances met with in the examination of the bodies of three children, each only a few months old: two of these children had been 'overlaid,' and the third had been intentionally suffocated.—*Externally:* features placid; lips congested; eyes not unduly prominent; conjunctivæ rather reddened; hands clenched; no patches of ecchymosis to be anywhere detected.—*Internally. Head:* patches of effused blood here and there beneath the pericranium; cranial bones engorged with blood. In two cases great congestion of the pia mater, accompanied by numberless effusions of blood, varying in size from a pin's point to a silver penny in superficial extent: no such effusion within the brain or its contained membranes: a little clear fluid in the ventricles. In the third case the appearances in the head

were natural, whilst those of the skull-bones and pericranium were the same as in the other cases: a little clear frothy mucus in the windpipe and bronchi, with redness of their lining-membrane.—*Chest:* the lungs were much congested and crepitant, whilst beneath the pleuræ blood had been everywhere effused, presenting numerous small bright-red patches, and fine points (punctiform ecchymoses); all the blood of the substance of the lungs was within its vessels. The pericardium contained some serum, and was spotted in its whole extent after the manner described; the vasa vasorum of the heart's great vessels and thoracic aorta were minutely injected. In one case there was a large quantity of blood effused posteriorly, and especially on the left side, in the groove between the auricles and ventricles, as though the coronary vein had been ruptured; this latter point, however, was not ascertained. In this instance, too, the substance of the heart, particularly its left ventricle, was so soft as to become readily pulpy on slight pressure between the finger and thumb. The right cavities in all the cases contained dark liquid blood; the left cavities were nearly empty; the tissue of the organ was free from effusion of blood. The surface only of the thymus-gland was mottled like the heart. There was no unnatural appearance within the abdomen.

Certain trials which took place some years since clearly proved that persons in a state of intoxication or infirmity had been murdered by smothering, for the sake of the money derived from the sale of the dead bodies! It will be sufficient to mention the trial of *Burke* and *Macdougall* in Edinburgh, and of *Bishop* and *Williams* in this metropolis, as affording ample evidence of the existence of this horrible system of secret murder. (See 'Ed. Med. and Surg. Jour.' April 1829, p. 236.) The victims were commonly destroyed by the assailant resting with his whole weight upon the chest, so as to prevent the motion of the ribs, and at the same time forcibly compressing the mouth and nostrils with his hands, to prevent the entrance of air. A case of this kind was referred to me for examination in 1831. (*Rex* v. *Elizabeth Ross*, Old Bailey Sessions, Dec. 1831, see vol. 1, p. 150.) It was remarkable for the fact that the prisoner was convicted of homicidal suffocation, although the body of the deceased was never discovered. ('Med. Gaz.,' vol. 37, p. 481.) In *Reg.* v. *Norman*, C.C.C., July 1871, the prisoner, a girl æt. 15, was indicted for murder by suffocation. She was a nursery-maid, and had the care of three children, the deceased, one of these children, being fifteen months old. There were three other charges of murder by suffocation against her, and one of an attempt to murder. There were suspicious marks of violence on the lower lip of deceased as if produced by pressure of the mouth against some hard substance. The medical witnesses attributed death to suffocation by pressure on the mouth, but admitted that the marks might have been accidental. On this admission the prisoner was acquitted. On the trial for the attempt to murder, the girl was convicted, and the evidence given in this case threw a light upon the mode in which she might have perpetrated the four murders with which she was charged. A little boy, æt. 10, was heard to give an alarm while in bed; it was like a stifled cry. The prisoner was caught in the act of getting off the bed. The boy was in great agitation, and said that the prisoner had tried to strangle him while he was sleeping. He was awoke by feeling a hand on his mouth and throat. He tried to make a noise, upon which the prisoner, who was lying upon him, gave him a sweet, and told him not to cry. His lips and throat were very sore. The prisoner was convicted and sentenced to ten years' penal servitude.

There can be no doubt that the four murders were all perpetrated in a similar manner, by burking—the children being helpless, and unable to give an alarm. Her conviction on the attempt, simply arose from this child being older and better able to resist. The facts show that medical science in many of these

cases is powerless to aid the law. It is not always possible to distinguish murder by suffocation from accident.

In Nov. 1844 a man was convicted at the Assizes of the Seine of the murder of a woman by placing a pitch-plaster over her face. A trial for murder by smothering took place at the Lincoln Lent Assizes, 1843. (*The Queen* v. *Johnson*.) The prisoner, while committing a burglary, tied the deceased to a bed, so that she could not move, and then tucked the clothes closely over her head: after remaining some hours in this condition the deceased died. The prisoner was convicted and executed. For an important case, involving the question of death from homicidal smothering, or from apoplexy, see that of *the Queen* v. *Heywood* (Lancaster Summer Assizes, 1839.)

As an accident, smothering may be conceived to take place when a person falls, in a state of intoxication and debility, so that his mouth is in any way covered, or the access of air to the mouth or nostrils is interrupted. On an inspection of the body the appearances elsewhere described (p. 86) will be met with in the lungs and heart. If the person has been able to struggle, it is probable that slight marks of violence in the shape of scratches or bruises may be found about the mouth and nostrils, with bruises or marks of pressure on the chest, legs, or arms, and a bloody mucous froth in the air-passages. The marks of violence may be slight, or even entirely absent. In a case of suspected murder a medical jurist should look for the special indications of suffocation in the lungs, the circumstances under which the body or bodies are found, the evidence of sudden death in the presence of food in the stomach, and, lastly, the absence of any other cause to account for death. All these sources of evidence may fail; and as the means by which homicidal smothering was accomplished are not likely to be found with the body, a medical opinion on the case may become little more than a conjecture. Still this may suffice when the evidence from extraneous circumstances is strong.

A remarkable case, involving the proofs of this mode of death in reference to three children, was referred to me for examination by the Home Office in May 1862. A man and his wife of the name of *Taylor*, living at Manchester, were charged with the murder of a Mr. *Meller*, and on searching their house their three children were found lying dead on the floor of a bedroom side by side. They were of the ages of twelve, eight, and five years—two girls and a boy. One of them had been seen alive on Wednesday, May 14, and their dead bodies were first discovered early on Friday morning, May 16. The children had on their nightdresses; the bodies had been carefully laid out—the arms by their sides. There was no rigidity, but the skin of the abdomen had a slightly greenish colour. In the opinion of those who first saw the bodies, the children had been dead from one to two days. The body of the eldest girl, æt. 12, presented no mark of violence around the neck indicative of strangulation. There was a recent bruise or scratch over the bridge of the nose, which had been produced during life. The surface of the brain was slightly congested. The lungs were of a reddish colour, full of air and not congested. The heart was natural, and the ventricles contained some fluid blood. In the stomach were four ounces of a fluid resembling barley-water, without colour, smell, or any other appearance to indicate the presence of a liquid or solid poison. There was no blood, and no undue secretion of mucus; the mucous membrane was pale. All the viscera were healthy, and revealed no cause of sudden death in any part. On the body of the second girl, æt. 8, a slight bruise was observed over the left eye, and another bruise over the shin-bone of one leg, both recent. The body of the boy, æt. 5, presented no mark of violence externally. In two of the children the pupils were dilated. Internally the appearances were similar to those found in the eldest girl. All the organs were healthy, and there was no apparent cause for death. The back of the throat and air-passages presented

no obstruction from mechanical causes. The conclusions arrived at by the medical gentlemen were—1st, that these children had not died from any natural cause; and, 2ndly, that they had not died from wounds, drowning, hanging, strangulation, starvation, or any of the ordinary causes of violent death.

No trace of poison, by odour or otherwise, was found on examination of the stomachs and their contents. Portions of the intestines and contents, with some of the viscera from the bodies of two of the children, were sent to me. I found these parts healthy, the intestines containing fæces, and free from any indication of the presence or action of any poison. Poisoning, which was at first suspected, appeared to be completely negatived by the circumstances. The children had died suddenly, at about the same time, and most probably from a similar cause. Only a powerful poison, in a strong dose, would be consistent with this state of facts. Such a poison would have been detected either in the stomach or bowels, by colour, smell, or the application of the usual tests. There had been no vomiting, and the poison had not passed off by the bowels; hence the case was most favourable for the detection of poison if it had been present. No poison could be detected and none could be traced to the possession of the accused.

It was suggested that the children had been killed by charcoal-vapour or coal-gas, but this suggestion was not supported either by the appearances in the bodies, or by any of the circumstances of the case. Two sponges were found in the room in a wet state, and it was supposed that they had been used for applying the vapour of chloroform. Although this mode of death would leave no evidence after two or three days, yet it was considered improbable that such persons as the prisoners would have the knowledge to use chloroform, and this liquid could not be traced to their possession. I examined the sponges for chloroform, and there was no trace of it. As there was nothing medically inconsistent with death from chloroform-vapour it was not absolutely excluded under the circumstances. On a consideration of the state of the bodies, and the whole of the facts proved, the conclusions which I drew, and which formed the basis of my evidence at the magisterial investigation, were —1. That these children died suddenly, and probably about the same time, from a similar cause; 2. That they did not die from any natural cause; 3. That they died either from suffocation as a result of smothering, or from the effects of chloroform-vapour.

No natural cause for sudden death could be suggested,—not to mention the extreme improbability that three healthy children, well supplied with food, should die simultaneously from any natural cause, of which no trace could be found in their bodies. If we except the act of suffocation by smothering, no cause of violent death could be suggested. It is highly probable that these children were smothered while in bed on the night of Wednesday the 14th. The state of the lungs and heart was consistent with this mode of death. The peculiar dotted appearance of the surface of the lungs, described by Tardieu (p. 86), if present, escaped the notice of the inspectors. There was a mark indicative of violence on the face of the eldest, and a bruise on the face as well as on the shin of the second girl,—the two who were strongest, and therefore most capable of resisting. These marks, although slight, clearly indicated violence during life. The whole of the moral circumstances, including the writing on papers found pinned to the dead bodies, tended to show that three murders had been deliberately perpetrated, and no more probable cause of death could be suggested than that of suffocation by smothering. The medical gentlemen who made the inspection considered that suffocation was not the cause of death, because 'there was no appearance of congestion about the lungs.' Some remarks on this post-mortem appearance have been made elsewhere (p. 86); and it is desirable, in reference to future cases, to point out the fallacy involved in the assumption that congestion of the lungs is necessarily present

in this kind of violent death. Mr. Watson observes that the gorged state of the right side of the heart and lungs is greatest when the act of suffocation (asphyxia) has been slow and gradual, by the access of air to the lungs not having been completely prevented. When, on the other hand, death has taken place quickly and suddenly from this cause, there is little or no unusual congestion of blood in the lungs or heart. ('On Homicide,' p. 115.) At page 118 he describes a case of death from suffocation in which the lungs were natural; and in the case of *Campbell*, for whose murder by suffocation *Burke* was convicted and executed in 1828-9, Dr. Christison and Mr. Newbigging found the organs within the chest perfectly natural, the lungs remarkably so, and unusually free from infiltration. The blood in the heart and great vessels as well as throughout the body was fluid and black. ('Ed. Med. and Surg. Jour.' vol. 31, p. 239.) Again, in the case of *Carlo Ferrari*, for the murder of whom *Bishop* and *Williams* were convicted and executed in London in 1831, the lungs were quite healthy and *not congested*; the heart was rather small, contracted, and its four cavities were perfectly empty. (Taylor's 'Elements of Medical Jurisprudence,' 1836, 292.) The prisoners in this case confessed that they had destroyed the deceased by suffocation. From these facts it will be perceived that the actual state of the lungs and heart in the bodies of those who had been notoriously murdered by suffocation, was considered thirty years afterwards, *i.e.* in these Manchester cases, to be inconsistent with death by this form of suffocation! These cases are in some respects similar to those in *Reg.* v. *Norman*, in which a girl, æt. 15, was charged with the murder of four children by suffocation (p. 94). There was equal difficulty in proving the cause of death. The unsuccessful attempt to suffocate one child led to the detection of the criminal, as well as of the means employed for destroying life.

In reference to the case of *Campbell*, Dr. Christison observes, 'that the conviction in the public mind that a well-informed medical man should always be able to detect death by suffocation simply by an inspection of the body and without a knowledge of collateral circumstances is erroneous, and may have the pernicious tendency of throwing inspectors off their guard, by leading them to expect strongly-marked appearances in every case of death from suffocation. That such appearances are very far from being always present ought to be distinctly understood by every medical man who is required to inspect a body and give an opinion of the cause of death.' (Op. cit. p. 243.) At the same time, in the absence of marked appearances to indicate violent death, due caution should be used by a medical witness in expressing an opinion. At the trial of the prisoner *Burke*, Dr. Christison restricted his opinion by stating that death by violence was, from the medical circumstances alone, *very probable*,—a degree of caution which on similar occasions it will be desirable for a medical witness to imitate. Under the rule of English jurisprudence, by which accused persons are not allowed to be interrogated, it is not possible to carry medical evidence further than this. There is nothing in the act of suffocation, as there is in wounds, poisoning, hanging, or strangulation, by which the hand of a criminal can be clearly and unequivocally traced.

CHAPTER 57.

GASEOUS POISONS—CAUSE OF DEATH MISTAKEN—CARBONIC ACID—MODE OF ACTION—SYMPTOMS—APPEARANCES—ANALYSIS—CHARCOAL-VAPOUR—ITS EFFECTS—CARBONIC OXIDE—COAL AND COKE VAPOUR—SULPHUROUS ACID—VAPOUR OF LIME- CEMENT- AND BRICK-KILNS—CONFINED AIR—COAL-GAS—CARBURETTED HYDROGEN—NITROUS OXIDE—ITS ANÆSTHETIC EFFECTS.

Mode of action of gaseous poisons.—In following common language, a medical jurist is compelled to apply the term suffocation to another variety of death, viz., to that of poisoning by *gases*. Physiological accuracy must here be sacrificed, in order that we may make ourselves generally intelligible. Thus, if a person dies from the effects of carbonic acid, of confined air, of sulphuretted hydrogen, or of other noxious gases, he is commonly said to die suffocated. Strictly speaking, he dies poisoned—as much so as if he had taken oxalic or hydrocyanic acid. The only differences are:—1. That the poison, instead of being liquid or solid, is *gaseous*; and 2. Instead of being applied to the mucous membrane of the stomach, it affects that of the *air-cells* of the lungs. In the action of arsenuretted hydrogen we have a clear instance of poisoning by a gas, and in the respiration of the narcotic vapours of chloroform and ether we have also illustrations of this form of poisoning. Owing to the fact that the poisonous material is in a finely-diffused state, and that in the air-cells of the lungs it meets at once with a large absorbing surface, and instantly enters the blood, the effects are more rapid and, *cæteris paribus*, more powerful. It has been remarked, too, that some (and probably all) of these aërial poisons have an accumulative action, *i.e.*, their effects continue to increase for a short period, even after a person has ceased to breathe them.

The cause of death mistaken.—The greater number of the poisonous gases are chiefly complex products of art, and are never likely to be met with in the atmosphere so abundantly as to produce injurious consequences; hence fatal accidents, arising from their inhalation, most commonly occur under circumstances which can leave no question respecting the real cause of death. The peculiar effects of all of these it will not be necessary to describe in this place; but there are two, a knowledge of the properties and operation of which may, on certain occasions, be required of a medical jurist: these are the CARBONIC ACID and SULPHURETTED HYDROGEN GASES. Agents of this description can rarely be employed with any certainty as instruments of murder; and if they were so employed, the fact could be established only by circumstantial evidence. One alleged instance of murder by carbonic acid is, however, reported by M. Devergie. ('Ann. d'Hyg.' 1837, 1, 201.) Death, when arising from the breathing of any of the gases, is generally attributable to suicide or accident. In France it is by no means uncommon for a person to commit self-destruction by sleeping in a closed apartment, in which charcoal has been suffered to burn; while in England accidental deaths are sometimes heard of, where coal or coke has been employed as fuel in small and ill-ventilated rooms. On such occasions a person may be found dead without any apparent cause to the casual observer; the face may appear pale or livid, and the skin may be covered with patches of lividity. The discovery of a body under these circumstances will commonly be sufficient in the eyes of the vulgar, to create a suspicion of murder; and some person, with whom the deceased may have been at that period on bad terms, will be pointed out as the murderer. In such a case, it is obvious that the establishment of the innocence of the accused will depend entirely on the discrimination and judgment of a medical practitioner. An instance, illustrative of the consequences of this popular pre-

judice, occurred in London in 1823. Six persons were lodging in the same apartment, where they were all in the habit of sleeping. One morning an alarm was given by one of them, a woman, who stated that on rising she found her companions dead. Four were discovered to be really dead, but the fifth, a married man, whose wife was one of the victims, was recovering. He was known to have been on intimate terms with the woman who gave the alarm, and it was immediately supposed that they had conspired together to destroy the whole party, in order to get rid of the wife. The woman who was accused of the crime was imprisoned, and an account of the supposed barbarous murder was soon printed and circulated in the metropolis. Many articles of food about the house were analysed, in order to discover whether they contained poison, when the circumstances were explained by the man stating that he had placed a pan of burning coals between the two beds before going to sleep, and that the doors and windows of the apartment were closed. (Christison, p. 583.) A set of cases of a similar kind, in which there was at first a strong suspicion of poisoning, has been reported in the 'Medical Gazette,' by Mr. Smith, of Liverpool (vol. 36, p. 937; see also 'Ann. d'Hyg.' 1843, 2, 56).

CARBONIC ACID.

This gas is freely liberated in respiration, combustion, and fermentation; it is also produced in the calcination of chalk or limestone, and is sometimes diffused through the shafts and galleries of coal-mines, where it is commonly called 'choke-damp.' Carbonic-acid gas is likewise met with in wells, cellars, and other excavations in the earth. In these cases it is generally found most abundantly on the soil, or at the lower part of the well; and it appears to proceed from the decomposition of animal and vegetable matters confined in such situations. The slow evaporation of water strongly charged with the gas, while trickling over the sides of these excavations, may likewise assist in contaminating the air. Damp sawdust or straw slowly absorbs oxygen from a confined atmosphere and sets free carbonic acid.

Action on the body. Fatal proportions.—Sir Humphry Davy believed that carbonic acid, in a perfectly pure state, did not pass into the trachea when an attempt was made to breathe it; the glottis seemed to close spasmodically at the moment that the gas came in contact with it. On diluting the carbonic acid with about twice its volume of air, he found that he could breathe it; but it soon produced symptoms of giddiness and somnolency. In a diluted state there is no doubt that it penetrates into the lungs, and that it is absorbed and circulated with the blood. M. Collard de Martigny found that a mixture of carbonic acid and oxygen, in atmospheric proportions, produced rapidly fatal effects upon the animal system. Such a mixture cannot be breathed even for a period of two minutes, without giving rise to serious symptoms. This proves that dilution with a normal proportion of oxygen does not prevent its poisonous effects. The specific action of this gas on the brain may be inferred from the headache, giddiness, somnolency, and insensibility, as well as from the loss of muscular power observed in persons labouring under its effects, and the paralysis which is sometimes seen in those who have recovered.

In reference to the fatal proportion, it is absolutely necessary to make a distinction between the contamination of air by the addition of a quantity of free carbonic acid, and the case where this gas is produced by combustion or respiration in a close apartment at the expense of the oxygen actually contained in the air. Every volume of carbonic acid formed by combustion indicates an equal volume of oxygen removed. Such an atmosphere is, *cæteris paribus*, more destructive than another where the air and gas are in simple admixture.

If we assume that in each case the noxious atmosphere contains 10 per cent. of carbonic acid, then in one instance there will be 7 per cent. more of oxygen and 7 per cent. less of nitrogen than in the other, since the production of 10 parts of carbonic acid as a result of combustion implies the loss of 10 parts of oxygen. This difference in the proportions may not be, practically speaking, correct, because there is no apartment sufficiently closed to prevent air rushing in from the exterior while combustion is going on within it; but, nevertheless, the above statement may be taken as an approximation to the truth. When the gas is respired in its lowest poisonous proportion, the symptoms come on more slowly, and the transition from life to death is frequently tranquil; this is what we learn from the histories of suicides. The symptoms in such cases appear to resemble closely those which indicate the progressive influence of opium or any other narcotic poison on the body.

Symptoms.—The symptoms of poisoning by carbonic acid vary according to the degree of concentration in which it is present in the atmosphere respired. When it exists in a fatal proportion the symptoms commonly observed are as follows:—A sensation of great weight in the head, a sense of pressure in the temples, a ringing in the ears, with a pungent sensation in the nose; a strong tendency to sleep, accompanied by giddiness, and so great a loss of muscular power that, if the person be at the time in an erect posture, he instantly falls to the ground as if struck. The breathing, which is observed to be at first difficult and stertorous (snoring), becomes suspended. The action of the heart, which on the first accession of the symptoms is very violent, soon ceases: sensibility is lost, and the person now falls into a profound coma, or state of apparent death. The warmth of the body still continues: the limbs are relaxed and flexible, but they have been observed in some instances to become rigid, or even occasionally convulsed. The countenance is livid or of a leaden colour, especially about the eyelids and lips, but on some occasions it has been pale and placid. The access of these symptoms is stated to have been sometimes accompanied by a pleasing sensation of delirium, while at others the most acute pains have been suffered. In some instances there appears to have been irritability of the stomach, for the affected person has vomited the contents of his stomach in a semi-digested state. Those who have been resuscitated have felt pain in the head, or pain and soreness over the body for several days; while, in a few severe cases, paralysis of the muscles of the face has supervened on recovery.

The statements made by chemists and physiologists, respecting the proportions of carbonic acid in air required to produce noxious or fatal effects on human beings, are very conflicting. Small animals, such as birds and mice, have been generally made the subjects of experiments, but the results thus obtained cannot be satisfactorily applied to show the fatal action of carbonic acid on man. Berzelius long ago stated that in a proportion of 5 per cent. in air it was not injurious, and that such a mixture might be usefully employed in the treatment of consumption. ('Traité de Chimie,' t. 2, p. 83.) Allen and Pepys inferred, from their experiments on guinea-pigs, that 10 per cent. of the gas would prove fatal to man. In the more recent experiments of Bernard this inference is corroborated by the fact that a bird died in two-and-a-half hours in an atmosphere consisting (in 100 parts) of 9·5 of carbonic acid, 28 of oxygen, and 62·5 of nitrogen. ('Les Substances Toxiques,' 1857, p. 135.) In this case the proportion was less than 10 per cent., while the proportion of oxygen was 7 per cent. more than that existing in the atmosphere. Regnault states that carbonic acid does not act deleteriously upon the body; for it may exist in considerable (?) proportions in air without producing much inconvenience to animals, provided the quantity of oxygen is sufficient to maintain respiration. ('Cours Elémentaire de Chimie,' 3rd ed., t. 1, p. 355.) This

statement is, however, not in accordance with the above-mentioned experiment of Bernard, or with the experiments of Rolandi and Collard de Martigny. The latter have shown that an atmosphere in which carbonic acid is substituted for nitrogen—the oxygen remaining the same—is fatal to animal life. It is certainly a matter of simple demonstration that such a mixture will not maintain oxycombustion for one instant; and animals do not commonly live in gaseous mixtures which will not support combustion. M. Leblanc placed in a close space a dog, a guinea-pig, a bird, and a frog. Carbonic acid was then allowed to flow in at the top of the receiver, and was diffused as it entered. In seven minutes the dog appeared uneasy; in three-quarters of an hour the dog and the bird were dying, and the body of the frog was swollen. At this time the air was composed of 30·4 parts of carbonic acid and 69·6 of atmospheric air. M. Guérard, who records this experiment, states that he has satisfied himself of the comparative innoxiousness of carbonic acid,—as he breathed without inconvenience air mixed with a large proportion of this gas, derived from the sudden expansion of the liquefied acid. ('Ann. d'Hyg.,' 1843, 2, 55.) The proportion, however, which he actually breathed under these circumstances is conjectural, and was probably small. His opinion is that carbonic acid is rendered more fatal by the presence of carbonic oxide, and that a quantity of each, which if respired alone would be innocuous, may become fatal to life if respired in mixture (loc. cit.).

Bernard affirms that carbonic acid is not poisonous, because no injurious symptoms followed when it was injected under the skin or into the blood of an animal. When an animal dies from breathing this gas, its death is, according to him, owing to the mere want of respirable air; hence he considers its action, like that of nitrogen and hydrogen, to be purely negative—in short, that it operates not by poisoning but by inducing suffocation. ('Les Substances Toxiques,' p. 137.) Nevertheless, it was found to differ from these two gases in its great solubility, so that it readily entered the blood, and was diffused with it. But M. Bernard's own experiments prove that carbonic acid destroys life under circumstances in which hydrogen and nitrogen do not. A bird placed in a mixture composed of 50 parts of nitrogen and 50 parts of oxygen breathed it without inconvenience: another bird placed in a mixture of 50 parts of carbonic acid and 50 parts of oxygen died instantly. Although the proportion of oxygen in the two experiments was more than twice as great as that contained in atmospheric air, the animal perished in the mixture of carbonic acid as rapidly as if no oxygen had been present. This result is wholly inconsistent with the assertion of Regnault that it can be breathed with impunity, provided there is sufficient oxygen to maintain respiration. M. Bernard's theory of the operation of carbonic acid when breathed, is that, its solubility being greater than that of oxygen, it tends to penetrate the blood in preference to this gas; but as the blood which reaches the lungs already contains carbonic acid, this cannot pass by exosmosis into such a mixture. Hence the blood circulates in its unchanged condition, and the animal dies from privation of oxygen. If this view is correct, there appears to be no reason why the more soluble carbonic acid should ever leave the blood, as in ordinary respiration, to replace the insoluble oxygen. The mode of operation here assigned to carbonic acid is of more interest in a physiological than in a medico-legal view. It is enough for a medical jurist to say that carbonic acid when breathed destroys life, even although a normal proportion of oxygen may be mixed with it. A human being dies, according to Bernard, not from the carbonic acid breathed acting directly as a poison, but from the effect of that which is already accumulated in the blood and circulated with it, although how this operates otherwise than as a poison to the body, he does not suggest. In his view it clearly *enters the blood when air containing* it is breathed. He found that

before the stage of asphyxia, the blood of an animal contained 2·88 per cent., while, after asphyxia was induced, the proportion of carbonic acid amounted to 4·55 per cent.: this difference, assuming the experiments to be correct, must be regarded as the fatal proportion. (Op. cit. p. 218.) These facts have an important bearing upon the cause of death when human beings perish in a confined atmosphere, in which carbonic acid necessarily accumulates as a result of continued respiration. Bernard's experiments show that no amount of oxygen or pure air will prevent an animal from perishing, provided the carbonic acid is in such quantity as to prevent the escape of this gas from the blood.

I am informed that the late Sir J. Simpson of Edinburgh had employed carbonic acid as an anæsthetic in the proportion of 20 per cent. with air, and that no ill-effects were produced. Such an atmosphere would be composed, in 100 parts, of 20 of carbonic acid, 16 of oxygen, and 64 of nitrogen. In this mixture, if carefully made, oxycombustion cannot be maintained, and thus, assuming the experiments to be correct, a man may breathe with safety and live in air in which a candle will not burn! On the other hand, Bernard's experiments prove that although in the enclosed spaces in which animals actually died, the proportions of oxygen varied from 3 and 5 to even 39 per cent., the proportion of carbonic acid never exceeded from 12 to 18 per cent. ('Les Substances Toxiques,' p. 140.) It is obvious that before inferences can be fairly drawn from experiments on human beings, there should be not only great accuracy in measuring proportions, but the lungs of the person should be completely emptied before the mixture of carbonic acid and air is introduced; and the mouth and nostrils should be completely closed except where the tube enters. Unless these precautions are observed, great fallacies must arise in the performance of such experiments. If such a mixture is loosely breathed like an anæsthetic vapour, so that air can at the same time freely enter the lungs, the proportion of carbonic acid which is actually taken into the air-cells must be a mere matter of conjecture. These circumstances may account for the conflicting results obtained—that human beings may breathe 20 per cent. of the gas without danger, while animals perished from breathing mixtures in which the gas never exceeded 18 per cent.! (See a paper by Dr. Marten, Casper's 'Vierteljahrsschrift,' 1864, 1, 197.)

It is a question whether time may not compensate for quantity. A proportion of 5 per cent. produces no immediate evil effects; but could such a mixture support life like the normal atmosphere, which contains only from 1-2000th to 1-2500th part by volume? In the deep Cornish mines I have found the air to contain 2 per cent. of carbonic acid, which is forty times greater than the atmospheric proportion. The miners suffer seriously in health; and, admitting that other influences are at work to account for this, a gas which operates by stopping the oxidation-changes of the blood would be likely to produce in time noxious effects on the body. The fatal proportion in all ordinary cases may be taken at from 10 to 20 per cent., and even less when the carbonic acid has been produced at the expense of the oxygen contained in an enclosed space.

Appearances after death.—The body of a person who has perished from the inhalation of carbonic acid is said to retain the animal heat, *cæteris paribus*, for a longer period than usual; and hence, according to Orfila, cadaveric rigidity does not commonly manifest itself until after the lapse of many hours. In a case to be related presently the body was, however, found to have cooled considerably within the short space of two hours. There is no reason to believe that this mode of death affects the rate of cooling or the access of rigidity. In some instances it is said the face has been found livid and swollen and the features distorted, but more generally it has been pale and placid, as if the *persons had died without* a struggle in the position in which their bodies were

found. The skin is sometimes livid, or presents patches of lividity, and the limbs are quite flaccid. The pupils have been found dilated. *Internally*, the venous system is filled with liquid blood of a dark colour. In death from carbonic acid as a result of combustion, the blood has sometimes had a light-red colour. The vessels of the lungs and brain are observed to be especially in a state of congestion. The tongue appears swollen, and it is stated by Orfila that the mucous membrane of the intestinal canal is often interspersed with dark ecchymosed patches. The following appearances were met with thirty hours after death in the bodies of two adults, male and female, who died from the accidental introduction of carbonic acid into their bedroom from burning ashes. Externally there was nothing unnatural, excepting a few slight discolourations on the back of the man: internally there was congestion of the membranes and great vessels of the brain. Each lateral ventricle contained about half-an-ounce of clear serum: the lungs were gorged with dark blood: and the lining membrane of the air-tubes (bronchi) was slightly reddened. The left sides of the heart were nearly empty: the right contained a quantity of dark half-coagulated blood. The stomachs were healthy. The bodies were found on the floor of the bedroom in easy positions. The deceased persons had had the power to get out of bed, but were unable to escape from the chamber. It will be perceived from this description that there is nothing very characteristic in the appearances, and thus it is always easy to ascribe death to apoplexy or some other cause; but it should be remembered that carbonic acid itself is a narcotic poison, inducing cerebral congestion and apoplexy.

The following singular case of death from carbonic acid was communicated to me by Mr. Procter of York. The deceased, an old woman, occupied a room under one in which there was a quantity of nitric acid kept in store. Owing to some accident a carboy was broken; the acid ran through the ceiling into the room below, acting upon and corroding the bed-coverings of the deceased's bed. As the room was quite filled with the nitric-acid fumes, a chemist was consulted, and he advised that whiting should be freely used for the purpose of neutralizing the acid. This advice was followed, and several persons, who were in the room witnessing the operation, felt oppressed and were obliged to leave it: they were observed to stagger, as if intoxicated, on reaching the street. The room was then completely closed, and the whiting allowed to remain in contact with the acid. The deceased had suffered from diarrhœa for a few days previously, and was obliged to resort to the night-chair, which was in the room in which the accident had occurred. As she remained absent half-an-hour, some persons entered the apartment, and found her in the chair unable to move. She was taken into another room, and on a medical man being called to her, he found her sleepy and comatose—her mind confused: there was great difficulty of breathing,—extreme lividity of the face and lips; the arms and legs were cold, and the pulse was full. In spite of efforts made to save her, she died in about an hour from the time at which she had entered the room. Those who found her in the apartment do not appear to have suffered. This was a case of slow poisoning by carbonic acid, for no carbonic oxide could have been evolved from the action of the acid on the chalk. Age and debility from previous illness may account for the unusual circumstance that the deceased did not recover on being removed to a pure atmosphere. In March 1863 a boy mounted on a forty-barrel vat, and while looking through the man-hole fell among some wet hops, and speedily died from respiring the atmosphere of carbonic acid. Two men successively endeavoured to rescue the boy, but each died in the attempt. In the same year a man at Bromley descended into a large vat, having previously applied the candle test. He was heard to cry out 'There is gas here,' and he instantly fell back dead: he had probably stirred up the *contents after he had lowered the* candle. ('Lancet,' Nov. 12, 1864,

552). Many other cases of a similar kind are reported. Under these circumstances the noxious agent is pure carbonic acid more or less mixed with air.

Analysis.—Sometimes a medical jurist may be required to state, for the purposes of justice, the nature of the gaseous mixture in which a person may have died. He will have but little difficulty in determining whether carbonic acid is or is not the deleterious agent in such a mixture. When it exists in a confined atmosphere, its presence may be identified, if previously collected in a proper vessel, by the following characters:—1. It extinguishes a taper if the proportion be above 12 or 15 per cent.; and, from the extreme density of the gas, the smoke of the extinguished taper may be commonly seen to float on its surface. 2. Lime-water, or a solution of subacetate of lead, is instantly precipitated white when poured into a jar of the gas; and the precipitate thus formed may be collected by filtration, and proved to possess the well-known properties of carbonate of lime or lead. Air containing only 1 per cent. of carbonic acid affects lime-water: if it amounts to 2 per cent. a few cubic inches will suffice to show its presence by the lime-water test. The *proportion* in which carbonic acid exists in a mixture may be determined by introducing into a measured quantity, in a graduated tube over mercury, a strong solution of potash. Absorption will take place after a certain time, and the degree of absorption will indicate the proportion of carbonic acid present. When this gas exists in a confined spot, as in a well or cellar, it may be generally got rid of by placing within the stratum a pan containing the hydrate of lime, loosely mixed into a paste with water; by exciting combustion at the mouth of the pit; or, what is better when available, by a jet of high-pressure steam. Lives are often successively lost on these occasions, in consequence of one person descending after another, in the foolish expectation of at least being able to attach a rope to the body of his companion. The moment that the mouth comes within the level of the invisible stratum of gas all muscular power is lost, and the person commonly sinks lifeless. Carbonic acid may be collected for the purpose of testing by lowering a bottle filled with fine dry sand, by means of a string attached to the neck, and guiding the bottle by another string attached to its base. When the bottle is within the stratum, it should be turned with its mouth downwards; and when the sand has fallen out, it may be rapidly raised, with its mouth upwards, by pulling the string attached to the neck. The bottle should be immediately corked, and the contents examined.

CHARCOAL-VAPOUR. CARBONIC OXIDE. GASES OF BLAST-FURNACES.

The vapour extricated during the combustion of charcoal is not pure carbonic acid, but a mixture of gases. It operates fatally when respired, partly in consequence of the carbonic acid contained in it, and partly from the presence of a variable proportion of carbonic oxide. The proportions of these gases, however, are subject to variation, according to whether the combustion is vivid or not. When the charcoal burned vividly, the quantity of carbonic acid was found by Orfila to be less than when it was either nearly extinguished or beginning to burn. In the former case the carbonic acid was in the proportion of about 11 per cent. by volume—in the latter the proportion amounted to about 14 per cent. Leblanc found that charcoal burning in the open air produced about ½ per cent. of carbonic oxide. There is no doubt that a low or imperfect combustion is more favourable to the production of this gas, and it is considered to operate more powerfully on the body than carbonic acid. According to Leblanc a bird was killed instantly by breathing air containing 4 or 5 per cent. of carbonic oxide; 1 per cent. only sufficed to cause death in two minutes. ('Ann. d'Hyg.' 1843, 2, 54; also 1864, 2, 48). Charcoal-vapour may be regarded as a mixture of carbonic acid, carbonic oxide, aqueous

vapour, and air partially deoxidized. There is also associated with it, at a low temperature, a small quantity of carburetted hydrogen. This does not appear to take any part in the fatal effects produced by the vapour: these are owing to the action of carbonic acid and carbonic oxide, and according to Bernard a mixture of the two is more destructive than either gas separately. ('Les Substances Toxiques,' p. 212.) M. Leblanc endeavoured to determine the proportion of the gases in charcoal-vapour when this was in such a condition as to prove fatal to animal life. The vapour was conducted from some fully-ignited fuel into an enclosed space in which there was a middle-sized dog whose condition could be watched. In ten minutes the animal fell exhausted, and in twenty minutes it died, after some hard breathing. A candle burnt with its usual brightness in the closed room, and it was only ten minutes after the death of the dog that the flame of the candle, from becoming paler and paler, was extinguished. The air of the chamber was at this time collected and analysed: it contained, in 100 parts—carbonic acid, 4·61; carbonic oxide, 0·54; carburetted hydrogen, 0·04; oxygen, 19·19; and nitrogen, 75·62. It would thus appear that less than 5 per cent. of carbonic acid is fatal to life when so little as ½ per cent. of carbonic oxide is mixed with it. (Bernard, op. cit. p. 159). The burning of a candle under the circumstances showed that oxy-combustion might be maintained in a mixture by which an animal is killed, and therefore a candle can furnish no criterion of safety in apartments in which charcoal has been burnt.

Symptoms and appearances after death.—The following case, illustrating the effects of charcoal-vapour, occurred to Mr. Collambell. ('Med. Gaz.' vol. 27, p. 693.) In January 1841 a man was engaged to clean the windows of three small rooms on the basement-floor of a house. The first room had a door opening into a court-yard; the others merely communicated with each other by a central door, and there was no fireplace in any one of them. A brazier of burning charcoal had been placed in the outer room for the purpose of drying it, but it appeared that the deceased had shut the outer door, and had removed the brazier into the inner room of the three, leaving the communicating doors open. In *two hours* the man was found quite dead, lying on the floor of the middle room. The countenance was pale, as well as the whole of the skin: the eyes were bright and staring, the pupils widely dilated, the lips bloodless, the jaws firmly fixed, the tongue protruding; and the face and the limbs were cold. Some frothy mucus had escaped from the mouth. The person who discovered the deceased, found the ashes in the brazier still burning, and he experienced great oppression in breathing. An inquest was held, without an inspection of the body, and a verdict of 'accidental death' returned. The body was afterwards privately inspected by Mr. Collambell. On opening the head, the vessels on the surface of the brain were found much distended with dark liquid blood; the pia mater was bedewed with serum. The brain was of unusually firm consistency, and numerous bloody points appeared on making a section of it. The lateral ventricles were distended with about an ounce and a half of pale serum, and the vessels of the plexus choroides were much congested. The cerebellum was firm, and presented on section numerous bloody points. About two ounces of serum, tinged with blood, were collected from the base of the skull. The lungs had a slate-colour. On the left side of the chest there were eight ounces of serum, tinged with blood, and nearly an equal quantity on the right side. On cutting into the organs, a large quantity of serous fluid mixed with blood, escaped. The bronchial tubes were filled with a frothy fluid tinged with blood. The pericardium contained an ounce of pale serum; the heart was enlarged,—its cavities contained no blood: the liver and kidneys were, however, much gorged. There was no doubt that the cause of death was *the inhalation of charcoal-vapour*; and it is probable that the

man died from breathing but a comparatively small proportion. The capacity of the chambers must have nearly reached two thousand cubic feet; the deceased had been there only two hours, and when the person who discovered him entered the rooms, the air was not so vitiated but that he could breathe, although with some oppression. The fuel was then in a state of combustion. In a case of death from charcoal-vapour, which was referred to Sir James Paget and myself for examination in 1851, there was a considerable effusion of blood in the submucous tissue of the stomach. This appearance led at first to a strong suspicion of irritant poisoning. A full investigation of the circumstances, however, showed that the suspicion was unfounded. The vapour had descended through a flue communicating with the bedroom in which deceased slept with her husband: it destroyed the wife, and nearly killed the husband. A stove with burning charcoal had been placed in the room above that in which the couple slept, and an iron pipe conveyed the products of combustion into a flue, whence they descended into the bedroom and caused the fatal accident. It is sometimes difficult to account for the mode by which these gaseous mixtures find their way into an apartment. In the above-mentioned case we had great difficulty in procuring correct information. There was no fire in the bedroom, or any source of combustion, and this at first strengthened the suspicion that the husband must have poisoned the wife at their supper on the previous night. M. Devergie relates a somewhat similar case, in which the wife was found dead in bed, while the husband, lying by her side, was in a state of unconsciousness, from which he did not recover until the next day. In this case there was no stove or fire, or any source of combustion in the room. The noxious gases must have leaked into the room through fissures in a chimney adjoining it. ('Ann. d'Hyg.' 1871, 2, 441.) Dr. Parker met with two cases of suffocation by carbonic acid. A mother and daughter went to bed. In the morning, the daughter was found on her face dead—the face livid, and there had been copious bleeding from the nose. The mother was insensible, and recovered only after many hours under treatment. The cause of the accident was traced to an imperfect joint in a furnace-flue, which passed through the bedroom to a chimney. This adjoined their bed, and the leakage took place directly upon them. The door was shut, and the smell, perceived at first, was supposed to come in from the outside. ('Med. Gaz.' vol. 47, p. 412.)

A remarkable instance of the effects produced by the products of combustion is reported by Mr. J. B. Thompson ('Ed. Month. Jour.' 1860, 1, 642). In a case which occurred to M. Guérard the liver and spleen were found gorged with dark liquid blood; the heart was collapsed, and its cavities were empty, but liquid and dark-coloured blood flowed from the large vessels. The windpipe and bronchi had a red colour, and were filled with frothy mucus. The membranes of the brain were congested, and the sinuses gorged with fluid blood. The face was pale, the eyelids were closed, and the pupils natural. There were livid patches over the body. ('Ann. d'Hyg.' 1843, 2, 57.)

The vapours which escape from ordinary blast-furnaces appear to owe their noxious effects to a mixture of carbonic acid and carbonic oxide, chiefly the latter. Such a mixture has no particular odour, and therefore gives no warning of its presence. The following case shows in what an insidious manner life may be destroyed by leakage of these vapours: it is reported by Dr. Percy, in his 'Metallurgy' (vol. 2, p. 531). Mr. *Truran*, engineer of the Dowlas Works, was found dead in his office. A brick culvert had been made through a pile of cinders (or cinder-tip) for conveying the blast-gases to the forge-boilers. The deceased's office was built upon this cinder-tip, about from ten to fifteen yards from the side of the culvert. A few days after the gases had been turned *through the culvert*, Mr. *Truran* went to his office about midday. In the

evening, as he did not return home as usual, his family made search for him, and he was found lying dead on the floor of his room. He had been sitting at his desk with some drawings before him, and he had evidently fallen dead from his seat owing to the effect of the gases. The smell of the furnace-gases was quite perceptible on entering the office: the gases had leaked through the cinder-tip and the bricked culvert into the office. The death of the *Halls* (husband and wife) at Sheffield, in January 1852, was owing to a similar leakage into their bedroom of the vapour of smouldering ashes. In July 1870 four men lost their lives in the ironworks of North Staffordshire as a result of the poisonous action of this waste gas from the blast-furnaces.

Power of locomotion.—It often excites surprise on these occasions that no exertion is made to escape, when it would apparently require but slight efforts on the part of the person affected. The fact is that the action of the vapour is sometimes very insidious: one of its first effects is to create an utter prostration of strength, so that even on a person awake and active, as in the case above related, the gas may speedily produce a perfect inability to move or to call for assistance. For some remarks on the action of charcoal-vapour by Dr. Bird, see 'Guy's Hospital Reports,' April 1839; and for a case illustrative of the dangerous effects of the diluted vapour, see 'Ed. Med. and Surg. Journ.' vol. 1, p. 541. In this instance a charcoal brazier was left, only for a short time, in the cell of a prison. It was removed, and the prisoners went to sleep. They experienced no particular effects at first, but after some hours two were found dead. Thus, then, an atmosphere which can be breathed for a short time with impunity may ultimately destroy life.

In a case of alleged murder by charcoal-vapour, which occurred in Paris a few years since, a question was put to the medical witnesses respecting the *quantity of charcoal* required to be burnt in a particular chamber in order to asphyxiate two adult persons. ('Ann d'Hyg.' 1837, 1, 201; 1840, p. 176: also 'Brit. and For. Rev.' No. 11, p. 240, and No. 23, p. 264.) This question could of course only be answered approximately; because in burning charcoal, the sole product is not carbonic acid, and the substance itself is by no means pure carbon. Then, again, much of the carbonic acid formed may escape in various ways from an imperfectly closed apartment. An attempt was made to infer the quantity of charcoal consumed from the weight of ashes found in the apartment, but no satisfactory answer could be given to this question. The prisoner was, however, convicted of murdering his wife by charcoal-vapour. I have found that ordinary wood-charcoal leaves, after perfect combustion, 3·1 per cent. of its weight of ashes.

M. Devergie has shown that the smothered combustion of *wood* may lead to the evolution of a noxious vapour (carbonic oxide), and give rise to dangerous consequences. ('Ann. d'Hyg.' 1835, 1, 442.) His remarks have been recently confirmed by two cases published by MM. Bayard and Tardieu. A man and his wife were found dead in bed. There was a smoky vapour in the apartment, but no fire had been lighted in the grate, and the chimney was blocked up. The planks of the floor were widely separated, and there was a large hole in the boards at the foot of the bed communicating with the apartment below. It was found, on examination, that some joists connected with the flue of an iron plate, which had been heated for making confectionery the previous day, were in a smouldering state; that the vapour had entered the bedroom of the deceased through the crevices in the floor, and, not finding a vent by the chimney, had led to these fatal results. It is remarkable that the source of combustion was nearly nine yards distant, and one person, who slept nearer to the flue of the iron plate, entirely escaped. In the body of the husband the skin was of a reddish tint, the blood liquid, the cavities of the heart empty, the *lungs gorged, and there* were no subpleural ecchymoses. In the

body of the wife there was less redness of the skin; the blood was coagulated in the cavities of the heart, principally on the right side extending to the vessels; less engorgement of the lungs, and a great number of subpleural ecchymoses, indicating that strong efforts had been made to respire. There was at first a rumour of poisoning, which was only removed by a close examination of the locality. ('Ann. d'Hyg.' Oct. 1845, p. 369.) Dr. Schauenburg has published the cases of two children who were destroyed in an hour by the vapour of burning wood. The mother had accidentally shut them up in a room into which the vapour leaked from the wood employed to heat an oven. In each case the brain and its membranes were found highly congested, while the lungs were collapsed, and contained no more blood than is usually found in them. (Eulenberg, 'Viertelj.' 1872, 1, 40.)

Combustion in mixtures containing carbonic acid.—In reference to suffocation by carbonic acid, there is one circumstance which requires attention. It is a matter of popular belief—and, in fact, it is generally asserted by writers on Asphyxia—that the burning of a candle in a suspected mixture of carbonic acid and air is a satisfactory proof that it may be breathed with safety. Recent observations have, however, tended to show that this statement is not to be relied on as affording an indication of security. A case is related by Sir R. Christison, where a servant, on entering a cellar in which grape juice was fermenting, was suddenly seized with giddiness. She dropped her candle on the floor, but had time to leave the cellar and shut the door behind her, when she fell down senseless. Those who went to her assistance found, on opening the door, that the candle was still burning. Other cases are reported in which persons have been discovered to be in a state of deep coma, while a pan of charcoal was still burning in the apartment (p. 105). The results of some experiments on this subject have led me to the conclusion that a candle will burn in air which is combined with even 10 or 12 per cent. of its volume of carbonic-acid gas: and although such mixtures might not prove immediately fatal to man, yet they would soon give rise to giddiness, insensibility, and ultimately death, in those who, after having been once immersed in them, did not hasten to quit the spot. In air containing a smaller proportion than this (5 or 6 per cent.), a candle will readily burn, but it is probable that such a mixture could not be long breathed without causing serious symptoms; hence the *burning of a candle can be no criterion of safety* against the effects of carbonic acid. It is true that in gaseous mixtures, where a candle is extinguished, it would not be safe to venture; but the converse of this proposition is not true—namely, that a mixture in which a candle burns may be always breathed with safety.

Diffusion of carbonic acid.—Of late years some important medico-legal questions have arisen, relative to the diffusion of this gas in air, when produced by combustion. It has been supposed that, owing to its great density (1·52), it would collect on the floor of an apartment, would gradually rise upwards, and suffocate persons at different times, according to the level on which they might happen to be placed. Questions on this subject have been variously answered, and a great difference of opinion has arisen among witnesses. There are two important points on which a correct answer to this inquiry must be based:—1st. The law of the diffusion of gases; and 2ndly. The effect of heat in greatly diminishing the specific gravity of a gas naturally heavier than air. There is no doubt that in a narrow or confined vessel, exposed to air, carbonic acid is slow in escaping;—nevertheless it mixes with air, and passes off rapidly in proportion to the surface exposed. In the course of an hour or two, in spite of its great specific gravity, none will be contained within the vessel. The well-known Grotta del Cane at Pozzuoli, near Naples, has been referred

to by those who hold that carbonic acid always tends to remain on the lowest level; but it has been forgotten that, in this and similar excavations, carbonic acid is continually issuing from crevices in the soil, so that that which is lost by diffusion is continually replaced: hence the illustration proves nothing. It may suffice to state, that air and carbonic acid mix readily on contact in all proportions, although they enter into no chemical union. Thus then, at common temperatures, carbonic acid has no tendency to remain on the floor or soil, when there is a free access of air or contact with other gases. The heat of combustion diminishes the specific gravity of the gas, and the carbonic acid therefore ascends with the heated current of air, and diffuses itself in the upper part of an apartment, when there are no means of carrying it off. This is a fact demonstrable by many simple experiments. In burning a quantity of charcoal actively in an open brazier raised above the floor in a large apartment, I found that the proportion of carbonic acid was nearly equal in air taken from a foot above and a foot below the level of the source of combustion, there being no lateral currents to affect the results. Hence it follows that carbonic acid produced by combustion has no tendency to collect at the lowest level—that it is uniformly diffused around; and probably it would be found, by careful experiments, that within apartments of small dimensions—those in which persons are often accidentally suffocated—the upper strata of air contain as much or even more carbonic acid than the lower. For this reason a room with a low ceiling is more dangerous than one which is high-pitched.

In a very large apartment, it would of course be improper to test the suffocating properties of the air, by the examination of it at a great distance from the source of combustion; since a person situated near this spot might be destroyed, while one at a distance might escape—the carbonic acid not having completely diffused itself; or, supposing it to have become entirely diffused, the proportion may be so small as to render it harmless. It is well known, by the effects of the vapour of a limekiln, that one lying at the edge of the kiln may be destroyed, while another at ten yards' distance, either on the same level or below it, may entirely escape; and it would not be possible, in such a case, to speculate upon the proportion of carbonic acid which had destroyed life, except by collecting the air from the spot where the accident occurred, and at or about the time of its occurrence. Another fallacy appears to be, that because a dead body is found recumbent, it is to be inferred that the person must have lain down and have been destroyed while sleeping. The dead body of a person must always be found thus lying on a floor, unless it be supported; but suffocation may have actually taken place, or at least have commenced, when the deceased was in the sitting or erect posture. Admitting that carbonic acid diffuses itself rapidly from combustion in a small and closed room, it has been supposed that, after having become mixed with the air, it would again in great part separate, and, owing to its superior density, fall to the lowest level on cooling. In answer to this it may be said,—1. That there are no facts to support the opinion, while there are many against it; for we do not find that heavy and light gases, when once really mixed, ever again separate from each other.—2. Practically this explanation amounts to nothing; because before the gas had cooled and reacquired its density, its asphyxiating properties would probably have had their full effect on all living persons within its reach. Persons are not suffocated by carbonic acid after the fuel is extinguished, and the room cooled; but the poisonous action of the gas is commonly manifested while the fuel is still burning. The inferences which, it appears to me, we are entitled to draw from the preceding observations, are,—1. That in a small and close room, persons are liable to be suffocated at all levels, from the very equal and rapid diffusion of carbonic acid during combustion;—2. That in a large room,

unless the gas be very rapidly diffused by a current, the air around the source of combustion may become impregnated with a poisonous proportion, while that at a distance might be still capable of supporting life; because carbonic acid requires time for its perfect and equable diffusion over a very large space.

CARBONIC OXIDE.

The noxious effects of the vapour of burning charcoal are now considered to be due chiefly to the presence of carbonic oxide. The action of this gas upon animal life has been made a subject of experiment by Bernard ('Leçons sur les Substances Toxiques,' p. 164). An atmosphere containing from 5 to 6 per cent. will destroy life, and in the proportion of 10 per cent. it was found by M. Gréhaut to be very poisonous to animals. The blood is brightened in colour by this gas, while it is darkened by carbonic acid. Bernard has observed that this bright colour has been retained for three weeks; and he considers the mode of action of this gaseous poison to be, that it prevents the arterial blood of the body from becoming venous, while carbonic acid operates by preventing the venous blood from becoming arterial. (Op. cit. pp. 182, 195.)

Carbonic oxide has been found to pass rapidly into the blood. Thus, in an animal breathing air containing 10 per cent. of carbonic oxide, this gas was found in the blood in a proportion of 4 per cent. in from ten to twenty-five seconds after the gas was breathed. At the same time the amount of oxygen was much reduced ('Amer. Jour. Med. Sci.' Oct. 1870, p. 527). An attempt has been made to determine its presence in the blood by spectrum-analysis. ('Ann. D'Hyg.' 1871, 1, 439; also Casper's 'Vierteljahrs.' 1864, 1, 198.)

This condition of the blood as a result of the action of carbonic oxide may occasion some doubt of the cause of death, in cases of suffocation by fire. In April 1858 an inquiry took place into the cause of death of fourteen persons, owing to a fire in a house in Bloomsbury. The medical witness, on examining the bodies, found a redness of the muscles and a redness of the blood. He therefore thought that death was not caused by suffocation, but from the inhalation of arsenical vapours, owing to some minerals containing arsenic having been partially consumed during the fire. But there was a total want of evidence to show that the vapours of arsenic, when breathed, would cause death so speedily as the noxious gases evolved by fire, or that they would redden the blood and muscles. On the other hand, the breathing of carbonic oxide would explain these facts. It is worthy of remark that in many of the observed cases of death from charcoal-vapour, the blood has had a darker colour than natural: the greater solubility of carbonic acid, and the larger proportion in which it is produced, may account for this effect.

The action of carbonic oxide on the body is that of a pure narcotic poison. M. Tourdes has ascertained that rabbits died in twenty-three minutes, when kept in an atmosphere containing 1-15th of its volume of pure carbonic oxide; when the proportion was 1-30th they died in thirty-seven minutes, and when 1-8th in seven minutes. Dr. Letheby states that in his experiments a mixture of ½ per cent. killed small birds in three minutes, and of 1 per cent. in about half this time. The animals showed no sign of pain: they fell insensible, and either died at once, without convulsions, or they gradually passed into a state of profound coma. He found, on inspection, that the blood was redder than usual, that the muscles of the heart were somewhat gorged, and that the brain was congested. ('Lancet,' March 1, 1861, p. 219.)

Among the appearances observed in animals destroyed by this gas, Ssabinski has pointed out an anæmic (bloodless) condition of the spleen. This organ had a rose-red colour, but when a section of it was made, scarcely any blood flowed from it. (Horn's 'Vierteljahrsschrift,' 1867, 2, 171.)

COAL AND COKE VAPOURS. SULPHUROUS ACID.

Products from burning coal and coke.—The gases extricated in the smothered combustion of coal or coke are of a compound nature. In addition to carbonic acid and carbonic oxide, we may expect to find in the atmosphere of a close room in which such a combustion has been going on, SULPHUROUS ACID GAS, and from coal, in addition to this, the sulphuretted and carburetted hydrogen gases. These emanations are equally fatal to life; but in consequence of their very irritating properties they give warning of their presence, and are therefore less liable to occasion fatal accidents. From an accident which occurred at Colchester a few years since, in which two children lost their lives, it would appear that some persons are so ignorant as to believe that the vapour of coke is less fatal than the vapour of charcoal. The sulphurous acid gas, when existing in a small proportion in air, has the effect of irritating the air-passages so violently that, if accidentally breathed, it would commonly compel the person to leave the spot before the vapours had become sufficiently concentrated to destroy life. Nevertheless, accidents from the combustion of coal and coke sometimes occur.

Symptoms and appearances.—The following cases will convey a knowledge of the symptoms and appearances which may be met with on these occasions. Some years since four persons, in a state of asphyxia, were brought into Guy's Hospital. It appeared that on the previous evening they had shut themselves up in the forecastle of a coal-brig, and had made a fire. About 6 or 7 o'clock on the same evening one of the crew unthinkingly placed a covering over the flue on the outside, and thus stopped the escape of smoke from the fire, which was made of a kind of coal containing much sulphur. Early in the morning one of the crew, on opening the hatches, observed three of the inmates lying on the floor senseless and frothing at the mouth, and the fourth in his crib in a similar condition. The air in the place was most offensive. After the men were brought on deck one of them, aged 21, began to recover, and when brought to the hospital he seemed only giddy, as if intoxicated; he soon completely recovered. Another, aged 40, after breathing oxygen gas and taking some brandy and ammonia, showed no symptoms of recovery, but died in a few hours. A third, aged 17, soon began to rally, and in a few hours he was able to answer questions; he declared that at the time of the accident he felt no pain, sense of oppression or weight, either in his head or chest. The fourth, aged 15, died the following day, having exhibited no symptoms of rallying. Stimulants were administered and warm fomentations were used, but all efforts to produce reaction failed. The appearance of these persons when brought in was as follows:—The lips were purple, the countenance was livid, and the surface of the body cold; the hands and nails were purple; the respiration was quick and short—the pulse small, quick, and feeble; the pupils were fixed, and there was total insensibility. The body of the man aged 40 was inspected four hours after death. The membranes of the brain were congested, and there was a large quantity of fluid under the arachnoid or middle membrane; the sinuses were gorged with blood; the lungs were in a state of great congestion, as were also the right cavities of the heart. It was remarked that, in its congested condition, this corpse was similar in appearance to that of an executed culprit. The body of the lad aged 15 was inspected about thirty-three hours after death. Under the pia mater or inner membrane of the brain, was observed one small ecchymosed spot; in the substance of the brain there were more bloody points than usual; a small quantity of fluid was found under the arachnoid membrane, and the sinuses were full of coagulated blood. The lungs showed no congestion, but the right cavities of the heart were much distended *with blood*. (For a report of cases of recovery

from the effects of coal-vapour, see 'Med. Gaz.' 9, p. 935; also 'Dub. Med. Press,' Jan. 31, 1849, p. 69; and 'Med. Gaz.' p. 43, 937.)

A case showing the fatal effects of coal-vapour has been published by Dr. Davidson. A man lost his life from sleeping in a closed room with a fire to which there was no flue. The lungs were found gorged with blood, and the windpipe and bronchi were filled with a frothy muco-sanguineous fluid; the mucous membrane beneath was slightly injected; there was a small effusion in each pleural cavity; the right side of the heart was full of dark liquid blood; the dura mater was much injected; the sinuses of the brain and the veins of the pia mater were completely congested, and there was subarachnoid effusion. The substance of the brain, when cut, presented numerous bloody points. ('Ed. Month. Jour.' April 1847, p. 763.) In the 'Medical Times and Gazette' (April 3, 1852, p. 353) the reader will find an account of three cases of recovery from the effects of coal-vapour. (See also, for other cases which proved fatal, the same journal, March 31, 1860, p. 323.)

Analysis.—Sulphurous acid is immediately known by its powerful and suffocating odour, which resembles that of burning sulphur. The best test for its presence is a mixture of iodic acid and starch, which speedily acquires a blue colour when exposed to the vapour.

The products of the combustion of impure *coal-gas* are equally destructive to life: they consist of carbonic acid and sulphurous and nitric acids.

VAPOURS OF LIME- BRICK- AND CEMENT-KILNS.

Gaseous products from lime-burning.—In the burning of lime, carbonic acid is given out abundantly, but, owing to the nature of the fuel used, carbonic oxide and sulphurous acid are mixed with it. Persons who have incautiously slept in the neighbourhood of a burning lime-kiln during a winter's night, have been destroyed by the respiration of these vapours. The discovery of a dead body in such a situation would commonly suffice to indicate the real cause of death; but a practitioner ought not to be the less prepared to show that there existed no other apparent cause of death about the person. It is obvious that a person might be murdered, and the body placed subsequently near a kiln by the murderer in order to avert suspicion. If there are no marks of external violence, the stomach should be carefully examined for poison; in the absence of all external and internal injuries, medical evidence will avail but little; for a person might be criminally suffocated, and his body, if found under the circumstances above stated, would present scarcely any appearances upon which a medical opinion could be securely based. An accident is related by Foderé to have occurred at Marseilles, in which seven persons of a family were destroyed, in consequence of their having slept on the ground-floor of a house in the courtyard of which a quantity of limestone was being burnt into lime. They had evidently become alarmed, and had attempted to escape; for their bodies were found lying in various positions. The courtyard was enclosed, and the carbonic acid had poured into the apartment through the imperfectly closed window and door. In November 1838 a man died three days after being exposed to the vapours of a lime-kiln. ('Guy's Hosp. Rep.' April 1839.)

The vapours of *brick-kilns* are equally deleterious, the principal agent being carbonic acid mixed with carbonic oxide; although I have found that, according to the state of combustion of the fuel, ammonia, hydrochloric acid, sulphuretted hydrogen, and sulphurous acid may be also evolved. In September 1842 two boys were found dead on a brick-kiln near London, whither they had gone for the purpose of roasting potatoes. Although the cause of death in the two cases was clearly suffocation, in one instance the body was extremely *livid, while in* the other there was no lividity whatever! Such accidents are

frequent: in November 1844 an inquest was held at Manchester on the body of a man who had died under similar circumstances.

Brick-kilns are frequently the subjects of injunction or action on the ground of their being public *nuisances*. There can be no doubt that the vapours which they give off are noxious, *i.e.* injurious to health as well as offensive, and that they create great discomfort. They contaminate the air, and render it unfit for respiration. In contested cases of this kind, the medical and general evidence is often very conflicting. If it is not proved by statistics that the mortality in the neighbourhood has actually diminished since the kiln was established, there will be witnesses to swear that they have suffered no inconvenience whatever from the vapours! In a case of this kind, *Re Tassell* 1867, V.C. Wood, in granting an injunction, justly observed that brick-burning was not the less a public nuisance because certain individuals were so peculiarly constituted as not to object to it, the real question being how far it affected the generality of persons of ordinary habits. The vapours of *cement-kilns* are quite as noxious as those of brick-kilns: carbonic and sulphurous acids predominate in them.

CONFINED AIR.

Symptoms and effects.—An animal confined within a certain quantity of air, which it is compelled to breathe, will soon fall into a state of lifelessness. A human being in the same way may be suffocated, if confined in a close apartment where the air is not subject to change or renewal, while the products of respiration are accumulated; and the effects are hastened when a number of persons are crowded together in a small space. The change which air, thus contaminated by breathing, undergoes, may be very simply stated. The quantity of nitrogen in 100 parts will remain nearly the same; the quantity of oxygen will probably vary from 8 to 12 per cent., while the remainder will be made up chiefly of carbonic acid. If many persons are crowded together the air will acquire a high temperature, and will be saturated with aqueous vapour which contains decomposing animal matter derived from the lungs and skin. From this statement, it is evident that air which has been contaminated by continued breathing will operate fatally on the human body, partly in consequence of its being deficient in oxygen, and partly from the noxious effects of the carbonic acid contained in it. The proportion in which carbonic acid exists in respired air is subject to variation: according to the experiments of Allen and Pepys, it never exceeds 10 per cent. by volume of the mixture, how frequently soever it may have been received into and expelled from the lungs. The influence of respiration on air may be thus stated:—An adult consumes from one to two gallons of air per minute, and the air expired contains from 4 to 5 per cent. of carbonic acid; but it is a remarkable fact that, when a person continues to breathe the same air, the proportion of carbonic acid expelled is reduced at each successive respiration. When the amount in air has reached 10 or 12 per cent. no more is thrown off by the lungs, and the blood is no longer depurated. For healthy existence a human being requires 20 cubic feet or 125 gallons of air per hour. A common candle will consume as much as two gallons of air per minute, or render that quantity of air unfit for breathing. Dalton found that the air in crowded rooms contained about 1 per cent. of carbonic acid, the atmospheric proportion being therefore increased twentyfold. It is certain that insensibility and death would ensue in a human adult before the whole of the oxygen of the confined air had disappeared; but the opportunity can rarely present itself of analysing such a contaminated mixture, and hence it is impossible to specify the exact proportion in which carbonic acid would exist when the confined air proved fatal to persons who had breathed it. M. Lassaigne has *shown, by direct experiment*, that the carbonic acid in the air of

close rooms is not collected on the floor, but equally diffused throughout. The whole mass of air is, in fact, vitiated, and requires renewal by proper ventilation. ('Méd. Gaz.' vol. 38, p. 351; see also 'Report on Mines,' 1864, App. B, p. 196, and 'Chemical News,' Feb. 17, 1865, p. 79.)

COAL-GAS. CARBURETTED HYDROGEN.

Coal-gas is a compound which when breathed acts directly as a poison. Many fatal accidents have occurred from the breathing of air contaminated with it. Its composition is subject to much variation, according to circumstances. Mitscherlich found that it was principally composed of light carburetted hydrogen, hydrogen, and carbonic oxide, in the proportion of 66 per cent. of the first, 21·3 of the second, and 11 of the third. M. Tourdes found that the porportions of light carburetted hydrogen and carbonic oxide were nearly equal, *i. e.* about 22 per cent. An analysis of coal-gas, as supplied in London, shows that in 1000 parts it contains—of hydrogen, 464·3; of light carburetted hydrogen, 389·3; carbonic oxide, 56·2; olefiant gas, 38·6; watery vapour, 24·8; nitrogen, 22·2; carbonic acid, 4·6. The difference in composition depends on the heat to which the gas has been submitted. Some consider that carbonic oxide is the poisonous principle; but there is no doubt that the hydrocarbons also have a noxious influence, although the use of the safety-lamp in mines proves that a mixture of light carburetted hydrogen with air in an explosive proportion, may be breathed without producing serious effects.

Symptoms and appearances after death.—The symptoms produced by coal-gas, when mixed in a large proportion with air, are—giddiness, headache, nausea with vomiting, confusion of intellect, loss of consciousness, general weakness and depression, partial paralysis, convulsions, and the usual phenomena of asphyxia. The appearances after death will be understood from the following cases. In January 1841 a family residing at Strasburg breathed for forty hours an atmosphere contaminated with coal-gas, which had escaped from a pipe passing near the cellar of the house in which they lodged. On the discovery of the accident four of the family were found dead. The father and mother still breathed; in spite of treatment the father died in twenty-four hours, but the mother recovered. When the five bodies were inspected, there was a great difference in the appearances; but the principal changes observed were, congestion of the brain and its membranes—the pia mater (inner membrane) being gorged with blood, and the whole surface of the brain intensely red. In three of the cases there was an effusion of blood (coagulated) on the dura mater and in the spinal canal. The lining-membrane of the air-passages was strongly injected, and there was spread over it a thick viscid froth tinged with blood; the substance of the lungs was of a bright-red colour, and the blood in the vessels was coagulated. ('Ann. d'Hyg.' Jan. 1842.) In two cases communicated by Mr. Teale to the 'Guy's Hospital Reports' (No. 8), there was found congestion of the brain and its membranes, with injection of the lining-membrane of the air-passages; the blood was remarkably liquid. An aged woman and her granddaughter, who had been annoyed by the escape of gas during the day, retired to bed, and they were found dead about twelve hours afterwards.

Mr. Bloxam has published a case of poisoning with coal-gas, which shows how easily life may be destroyed by it. The appearances in the body are more fully described than usual. In November 1861 Mr. Bloxam saw the deceased, who was a gas-fitter: he was supported in a sitting posture on the floor. The man had accidentally breathed coal-gas while connecting a tube with a meter. The skin was cold, the cornea glazed, and the face pale and placid; there was some froth about the mouth, the pupils were rather dilated, and the limbs supple. *There was a strong smell* of gas in the place. He was working in a closet,

and he was found insensible on the top of a pair of steps in a sitting posture—his head on one side, his arms hanging down, and his back leaning against the wall, in the attitude in which he had been engaged at his work. He had evidently died quietly and placidly on his seat, and had made no attempt to descend the steps. He was last seen alive an hour before he was found dead, and he no doubt died rapidly from the inhalation of the gas. An inspection of the body was made twenty-four hours after death. Externally the skin of the face and upper part of the body was pale—rigidity was well-marked, and there was general lividity of the back of the body as well as of the limbs. The blood was everywhere fluid. The brain and its membranes were not congested, but were rather pale than otherwise; the ventricles contained a pale serum. The brain and cerebellum were apparently healthy. There was a strong odour of coal-gas on exposing the brain. The lungs were of a dark-red colour, and did not collapse on raising the chest-bone; they were dark at the back of the lobes from gravitation of blood; their structure was healthy. The windpipe and bronchi contained frothy mucus in some quantity. A powerful odour of gas was perceived on compressing the lungs. The heart was healthy; the right cavities were distended with blood, the left were nearly empty; the blood was everywhere black. There was congestion of the abdominal viscera, but no other unusual appearance. ('Med. Chir. Trans.' 1862, 45, 103.)

In the cases above related, the effects produced by coal-gas were owing to the long-continued breathing of it in a diluted state. The quantity contained in the air of the rooms must have been very small: in the Strasburg cases it was probably not more than 8 or 9 per cent., because at a little above this proportion the mixture with air becomes explosive; and there had been no explosion in this case, although in the apartment in which the persons were found dead a stove had been for a long time in active combustion, and a candle had been completely burnt out. In Mr. Teale's cases those who entered the house perceived a strong smell of coal-gas, but still the air could be breathed. A set of cases occurred at Leeds, in November 1870, in which four persons lost their lives from the breathing of coal-gas in a diluted state. The gas main had in it a crack from which the gas had leaked on each side of the party-wall between the two houses in which the deceased persons lived. The air of the bedrooms had been gradually impregnated with gas, causing loss of muscular power and insensibility, and they appeared to have passed from sleep into death without making any effort to escape. Like diluted chloroform vapour, the gas produces, very gradually, anæsthesia followed by fatal narcotism. A slight leakage into a bedroom is sufficient to produce fatal effects. In August 1869 a man was found dead in bed, and there was a strong smell of gas on entering the room. It had escaped, while the deceased was sleeping, from some small holes which were accidentally made in the gas-pipe by driving nails into a plank of the floor. On inspection, the brain was found congested and the lungs engorged with blood throughout their substance. The lining membrane of the stomach was of a deep red colour. The other organs were healthy. The cause of death was the breathing of coal-gas in a diluted state. The gas had only been turned on at 6 A.M., while the man was sleeping, and he was found dead at 10. He had then probably been dead about two hours, and had passed rapidly from sleep into death by breathing this poisoned atmosphere. This gas may destroy life if long breathed, although so diluted as not to produce any serious effects in the first instance. Insensibility may, however, be an early symptom in a very diluted atmosphere, and unless the person is speedily removed into fresh air he will die. In a case which occurred to Mr. Jessop, a man entered a large open pipe four feet in diameter, which had been used for gas, to look for a leak. He thought all the gas had been let off. On entering the pipe he perceived a *strong smell, and remembered* nothing further. He was taken to

the infirmary in an unconscious state, suffering from violent muscular contractions. He recovered in two days. ('Lancet,' 1870, 2, 816.) The breathing of this gas renders a man entirely powerless to give any alarm or make any effort to save himself. Stupefaction, and a loss of all muscular power, speedily follow the inhalation of diluted coal-gas. ('Ann. d'Hyg.' 1870, 1, 60.)

Coal-gas owes its peculiar odour chiefly to the vapour of naphtha: its presence is thus indicated. The odour begins to be perceptible in air when the gas forms only the 1000th part; it is easily perceived when forming the 700th part; but the odour is strongly marked when it forms the 150th part (Tourdes). In most houses in which gas is burnt, the odour, owing to leakage, is plainly perceived; and it is a serious question whether health and life may not often be affected by the long-continued breathing of an atmosphere containing but a very small proportion. The odour will always convey a sufficient warning against its poisonous effects. It should be known that this gas will penetrate into dwellings in an insidious manner. In Mr. Teale's cases, the pipe from which the gas had escaped was situated about ten feet from the wall of the bedroom where the women slept: the gas had permeated through the loose earth and rubbish, and had entered the apartment through the floor. I have notes of several other cases in which coal-gas has thus destroyed life by leakage into bedrooms. (See 'Lancet,' 1872, 1, 32.)

It is impossible to determine exactly what proportion of this gas in air will destroy life. An atmosphere containing from 7 to 12 per cent. has been found to destroy dogs and rabbits in a few minutes; when the proportion was from 1½ to 2 per cent. it had little or no effect. With respect to man, it may destroy life if long breathed when forming about 9 per cent., *i. e.* when it is in less than an explosive proportion. (See 'British and Foreign Med. Rev.' vol. 20, p. 253; also 'Ann. d'Hyg.' 1830, 1, 457; also 1870, 1, 63.) The late Dr. Aldis observed in his experiments that in ordinary coal-gas mixed with air rats were rendered insensible in half a minute, and died in a minute and a half to two minutes. There was before death spasmodic action of the diaphragm. The gas was allowed to enter slowly into a bell-jar of air in which the animals were placed. ('Med. and Chir. Trans.' 1862, 45, 100.)

Analysis.—The circumstances under which the accident occurs will generally suffice to establish the nature of the noxious agent. Coal-gas burns with a bright-white light, producing carbonic acid and water. A taper should be cautiously applied to a small quantity; since, when the gas is mixed with the air in the proportion of from 11 to 14 per cent., it is dangerously explosive. For this reason no lighted candle should be taken into an apartment where an accident has occurred, until all the doors and windows have been for some time kept open, and the smell of gas has entirely disappeared. (See 'Med. Gaz.' vol. 42, p. 343.) The combustion of the gas, or its explosion with air, is a sufficient test of its nature; the peculiar odour and the want of action on a salt of lead, if the gas is pure, will distinguish it from sulphuretted hydrogen.

NITROUS OXIDE.

A recent case of death from the inhalation of this gas renders a short notice of it necessary. Sir Humphry Davy was the first to show by experiments on himself that, under certain precautions, it might be breathed without danger to life, and that it had the effect of producing an agreeable species of intoxication. Sir Humphry in one experiment breathed three quarts, in another nine quarts, and in a third twenty quarts of unmingled nitrous oxide. (Brewster's 'Natural Magic,' p. 345.) He suffered no injury from inhaling these quantities, either at the time or subsequently. I have seen it taken in quantities of about two to three quarts in more than five hundred cases, without any ill effects following.

ese cases the first symptoms were pallor of the countenance, lividity of ips, a staggering gait, followed by violent muscular exertions. These s passed off in from three to five minutes. In a few cases a feeling of ustion, with headache and pain in the chest, followed the inhalation. Sir d Brewster describes, on the authority of Professor Silliman, two cases in h some remarkable after-effects were produced. A young man who took us oxide for the sake of experiment was seized with a fit of delirium, and making some violent exertions, fell exhausted on the ground: convulsions wed, and he uttered the most piercing shrieks and cries. These symptoms nued for two hours: he was perfectly unconscious of what he was doing, was in every respect like a maniac. On recovery he stated that his feel- vibrated between the most perfect happiness and the most consummate y. He recovered in three or four days, suffering only from a feeling of ie and exhaustion.

ie other case was that of a man of mature age and of a grave and respect- character. He had been suffering from bodily and mental debility just e taking the gas, of which he inhaled three quarts. The consequences an astonishing invigoration of his whole system, with a great increase of ular power. These effects were felt for at least thirty hours, and in a er or less degree for more than a week. The gas had a singular effect on rgan of taste. The gas itself, as is well known, has a sweetish taste, and ding to Prof. Silliman this gentleman after inhaling it had acquired a for such things only as were sweet. For several days he ate chiefly sweet and sugar and molasses on his bread and butter, as well as upon his meat egetables. Even after eight weeks had elapsed, he was found pouring ses over beef, fish, poultry, cabbage, potatoes, or whatever animal or able food was placed before him. It was noticed by his friends that his i and spirits had undergone a remarkable change. (Brewster's 'Natural c,' p. 349.)

ssing from these exceptional cases, no instance of the gas proving fatal een until recently recorded. Nitrous oxide has been employed extensively ulists and dentists as a substitute for the vapour of chloroform and ether, so far as it is known, with greater safety than these two anæsthetics, the s passing off more rapidly and leaving no unpleasant after-consequences. ese cases, too, it has been administered in doses not of quarts, as in the experiments of Davy, but of gallons. At the same time nitrous oxide can- e substituted for atmospheric air without danger to life. It cannot pro- in the blood those oxidation changes on which life depends, which are ced by the uncombined oxygen of the air. It is absorbed into the blood ters its colour to a deep purple, as indicated by the bluish or livid colour lips. An animal soon dies in this gas when air is not supplied; and from mptoms preceding death, namely, convulsions and insensibility, it must arded as a neurotic poison, but not of a dangerous kind.

January 1873 it was administered by a dentist at Exeter to a lady, , at her own desire, in order to annul pain during the extraction of a tooth. A physician carefully examined her before the operation, and that there was nothing to preclude the use of the gas. The nitrous was pure: it had been safely used for other patients from the same con- , and an apparatus was employed so as to secure the removal of the d air. The total quantity administered was about six gallons. This not be regarded as an overdose. Sir H. Davy himself breathed with five gallons in one of his experiments. Soon after the commencement inhalation it was observed that the pulse became rapid and less full, in- ig an action on the heart; the patient was then sensible, and the appa- was removed. *The operation was commenced*, but the lady insisted on

having the gas again. She took it; insensibility came on, and the operation was completed. Immediately afterwards the face became livid, the features began to swell, and the tongue protruded. In spite of every effort to restore her, she did not recover from the state of insensibility; she breathed two or three times, and the pulse then ceased. No inspection of the body was made. The above-mentioned facts were given in evidence at the coroner's inquest, and the medical opinion was that death had been caused by the gas in producing paralysis of respiration, and that in this case no forethought could have prevented the result. The jury returned a verdict of homicide by misadventure. ('Lancet,' 1873, 1, 178.) It has been suggested that in this case death may have taken place from suffocation, by blood entering the air-passages; but while there were no symptoms indicative of this, the facts conclusively prove that the gas operated as a blood-poison to destroy life.

Nitrous oxide as an anæsthetic.—Some observations on the comparative effects of nitrous oxide, bichloride of methylene, and chloroform as anæsthetics, have been published by Mr. R. Rendle, Surgical Registrar of Guy's Hospital. ('Brit. Med. Jour.' Oct. 16, 1869.) He gave the nitrous oxide in twenty-four cases, the gas being re-breathed and the carbonic acid of the expired air at the same time removed by slaked lime. The persons to whom it was given varied from 3 to 73 years of age. It was given chiefly for short operations on the eyes and teeth. The shortest period in which anæsthesia was produced was 60 seconds, the longest 150; the average was about a minute and a half. Anæsthesia was maintained *thirteen minutes* in one case, six minutes in five cases, four minutes in five, two minutes in twelve, and one minute in one case. Intervals of breathing air were allowed in all but one. The period during which air was admitted, varied very much, and herein lies probably the secret of preventing fatal accidents. When the quantity of air admitted was small, anæsthesia was still produced, though less rapidly, and the blueness of the lips and skin was less marked.

A woman, æt. 48, was under the influence of the gas in one minute. It was continued for five minutes longer, without any admission of air. At the end of this time she was unusually blue, and the breathing and pulse were very slow and failing. The gas was removed and the woman turned over on her left side, the plan of restoration employed at Guy's Hospital when unpleasant symptoms occur. This woman must have been very near death, and probably would have died had she been in the sitting posture. She gradually recovered, and walked away in five minutes more. One man who began to imbibe the gas for the extraction of a tooth, pushed away the inhaler, and refused to continue breathing the gas. He complained of very unpleasant symptoms in his head for some hours after, but these passed off. One woman complained of headache. In one case, that of a child æt. 4, vomiting followed. In a child æt. 3, where anæsthesia was maintained for a minute and a half, two intervals of breathing air having been allowed, the respiration ceased and the pulse sank so as to be scarcely perceptible for several seconds. The gas was removed, and the child was turned slowly over on his left side. He gave a deep sigh; the pulse and breathing gradually returned, and he completely recovered in five minutes.

According to Mr. Rendle the advantages of nitrous oxide are the rapid production of, and recovery from anæsthesia, the absence of sickness, and the agreeable taste. He considers it safe for all operations, short or long, even to a duration of twenty minutes, provided there be a due admission of air at proper intervals. But that great care is required in its use is shown by the alarming symptoms which occurred in some of the cases. Among its disadvantages are these: it is apt to produce rigidity of the muscles, with muscular *twitching and congestion*. Mr. Tomes met with cases in which recovery was

slow: there was feeble pulse, irregular breathing, loss of appetite, and a necessity for stimulants. In one instance coma was produced; and other cases are reported of sudden supervention of dangerous symptoms—sickness and apparent death.

It would appear therefore that the danger from nitrous oxide arises chiefly from the continuous administration of the gas without allowing proper intervals for the breathing of air. In one case, *suprâ*, Mr. Rendle gave the pure gas for six minutes without the admission of air. Death did not result, although the symptoms produced were very alarming. ('Brit. Journal of Dental Science,' May 1871.) Mr. Rendle has not met with a case which has proved fatal out of some hundreds of cases of the administration of this gas, and his experience in this respect is corroborated by that of others. His conclusion is, 'that those agents which produce well-marked alarming symptoms of approaching danger will not so frequently cause death, and therefore be considered the safest, while others which require greater skill and watchfulness on the part of the administrator to recognize approaching danger, will cause death frequently, and therefore may be regarded as more dangerous.' In the numerous cases in which he has given nitrous gas and other anæsthetics at Guy's Hospital, he has not met with an accident, but several of the cases would easily have been lost by a moment's inattention.

The fatal case related at p. 117 *ante* has given rise to some difference of opinion. As the body was not inspected, the cause of death can only be a matter of inference, but all the facts known, point to this conclusion—the only practical one which concerns the public—that but for the administration of the nitrous oxide this lady would not have died. Whether the proximate cause was asphyxia from paralysis of the muscles of respiration, or from the entrance of blood into the air-passages, is not very important. According to the report of a committee appointed to investigate the effects of nitrous oxide as an anæsthetic, this gas operates by preventing oxidation-changes in the blood, and, as in death from asphyxia, the respiration is arrested before the heart ceases to beat. ('Lancet,' 1872, 2, 687.) See also a reference to asphyxia, vol. 1, p. 163. For some additional remarks on the case see 'Lancet,' 1873, 1, 245. At page 254 of the same volume will be found a further report by Mr. Browne Mason.

It is evident that much is still to be learned respecting the operation of nitrous oxide on the human body. One experienced administrator contends that air must be occasionally admitted in order to prevent fatal effects, while another states that, according to his experience, the giving of air prevents complete insensibility, and therefore does not fulfil the purpose for which the gas is administered. ('Lancet,' 1872, 2, 762.) The nitrous oxide has beyond doubt caused fewer accidents than the vapours of ether and chloroform; but there is a very narrow line between life and death in the action of this as well as of all anæsthetics, and it should therefore only be given by a skilled administrator.

CHAPTER 58.

SULPHURETTED HYDROGEN GAS—ITS POISONOUS PROPERTIES—SYMPTOMS—POST-MORTEM APPEARANCES—EFFLUVIA OF DRAINS AND SEWERS—ANAYLSIS—MEPHITIC VAPOURS—EXHALATIONS FROM THE DEAD.

SULPHURETTED HYDROGEN has a more powerful action on the body than either carbonic acid or *charcoal-vapour*. Persons are sometimes accidentally killed

by it; but the very offensive odour which a small portion of it communicates to a large quantity of air is sufficient to announce its presence, and thus, with due caution, to prevent any dangerous consequences. Sulphuretted hydrogen gas, when breathed in its pure state, is instantaneously fatal. It exerts equally deleterious effects upon all orders of animals, and upon all the textures of the body. It has been found to destroy life even when it is allowed to remain in contact with the skin. Mr. Donovan states that a rabbit enclosed in a bladder of sulphuretted hydrogen gas, but allowed to breathe freely in the atmosphere, perished in ten minutes. When introduced into the lungs of animals, even in a diluted state, it has given rise to fatal consequences. Thus Thénard found that air which contained only 1-800th of its volume of this gas would destroy a dog, and that when the gas existed in the proportion of 1-250th it sufficed to kill a horse. The latter researches of M. Parent-Duchâtelet have, however, shown that the poisonous effects of the gas have been somewhat exaggerated, at least in the application of these results to man. He observed that workmen breathed with impunity an atmosphere containing 1 per cent. of sulphuretted hydrogen; and he states that he himself had breathed, without serious symptoms ensuing, air which contained *three per cent.* In most drains and sewers rats and other vermin are found to live in large numbers; and, according to Gaultier de Claubry, the air in these localities contains from 2 to 8 per cent. (Devergie, 'Méd. Lég.' vol. 2, p. 520.) Thus, admitting sulphuretted hydrogen to be a more powerful poison than charcoal-vapour, it does not appear to be so energetic as Thénard's experiments would lead us to suppose. An atmosphere containing from 6 to 8 per cent. of the gas might speedily kill, although nothing certain is known of the smallest proportion required to destroy human life. One fact, however, is worthy the attention of medical jurists, namely, that the breathing of an atmosphere only slightly impregnated with the gas may, if long continued, seriously affect a person, destroy health, and even cause death. M. d'Arcet was required to examine a lodging in Paris, in which three young and healthy men had died successively, in the course of a few years, under similar symptoms. The lodging consisted of a bedroom with a chimney, and an ill-ventilated anteroom. The pipe of the privy passed down one angle of the room by the head of the bed, and the wall in this part was damp from infiltration. At the time of the examination there was no perceptible smell in the room, although it was small and low. M. d'Arcet attributed the mortality in the lodging to the slow and long-continued action of the emanations from the pipe; and it is highly probable that this was the real cause. ('Ann. d'Hyg.' Juillet, 1836.) The men who were engaged in working at the Thames Tunnel suffered severely during the excavation, from the presence of this gas in the atmosphere in which they were obliged to work. The case was referred to me for examination by Sir I. M. Brunel in 1839. The air, as well as the water which trickled through the roof, was found to contain sulphuretted hydrogen: it was probably derived from the action of the water on iron-pyrites in the clay. The gas issued in sudden bursts, so as to be at times perceptible by its odour. As a result of breathing this atmosphere the strongest and most robust men were, in the course of a few months, reduced to an extreme state of exhaustion, and several died. The symptoms with which they were first affected were giddiness, sickness, and general debility; they became emaciated, and fell into a state of low fever, accompanied by delirium. In one case which I saw, the face of the man was pale, the lips of a violet hue, the eyes sunk with dark areolæ around them, and the whole muscular system was flabby and emaciated. Chloride of lime and other remedies were tried for the purification of the air; but the evil did not entirely cease until the tunnel was so far completed that there was a communication from one side to the other, and free ventilation established throughout.

Symptoms.—The symptoms produced by sulphuretted hydrogen on the human body vary according to the degree of concentration in which it is breathed. When breathed in a moderately diluted state, the person speedily falls inanimate. An immediate removal to pure air, and the application of stimulants, with cold affusion, may, however, suffice to restore life. According to the account given by those who have recovered, this state of inanimation is preceded by a sense of weight in the stomach and in the temples; also by giddiness, nausea, sudden weakness, and loss of motion and sensation. If the gas in a still less concentrated state be breathed for some time, coma, insensibility, or tetanus with delirium supervenes, preceded by convulsions, or pain and weakness over the whole body. The skin in such cases is commonly cold, the pulse irregular, and the breathing laborious. When the air is but slightly contaminated with the gas, it may be breathed for a long time without producing any serious symptoms; sometimes there is a feeling of nausea or sickness, accompanied by pain in the head, or diffused pains in the abdomen. The symptoms are often observed to affect those who are engaged in chemical manipulations with this gas. Sulphuretted hydrogen appears to act like a narcotic poison when highly concentrated, but like a narcotico-irritant when much diluted with air. It is *absorbed* into the blood, to which it gives a brownish-black colour, and it is in this state circulated throughout the body. In all cases a noxious atmosphere containing this gas is indicated by an offensive smell producing nausea and sickness. For a case of poisoning by this gas, in which the person recovered, see 'Medical Gazette,' vol. 43, p. 871.

Appearances after death.—On examining the bodies of persons who have died from the effects of sulphuretted hydrogen, when breathed in a concentrated form, and the inspection was recent, the following appearances have been observed:—The mucous membrane of the nose and throat is commonly covered by a brownish viscid fluid. An offensive odour is exhaled from all the cavities and soft parts of the body. These exhalations, if received into the lungs of those engaged in making the inspection, sometimes give rise to nausea and other unpleasant symptoms, and may even cause syncope or asphyxia. The muscles of the body are of a dark colour, and are not susceptible of the galvanic stimulus. The lungs, liver, and the soft organs generally, are distended with black liquid blood. There is also great congestion about the right side of the heart, and the blood has been found everywhere liquid and dark-coloured: the body rapidly undergoes the putrefactive process. When death has occurred from the breathing of this gas in a more diluted form, the appearances are less marked. There is then general congestion of the internal organs, with a dark and liquid state of the blood. In fact, in such cases the appearances can scarcely be distinguished from those produced by carbonic acid. Four men lost their lives in the Fleet Lane Sewer in February 1861: they were found dead, and there was no doubt that sulphuretted hydrogen was the cause of death. An account of the appearances presented by the bodies is given in the 'Lancet,' by Mr. Holden and Dr. Letheby (February 23, 1861, p. 187). The eyes and mouth were open, the lips and tongue livid, the pupils widely dilated, the blood black and fluid, the lungs congested, the heart full of black fluid blood, the right side gorged, and there was a bloody froth in the windpipe. In the brain the large vessels of the dura mater were full of black fluid blood.

In June 1857 six persons lost their lives, at *Cleator Moor*, near Whitehaven, by the respiration of sulphuretted hydrogen in a diluted form, by reason of their having slept in small close non-ventilated rooms, into which the gas had penetrated. Three of the deceased persons—a husband, wife, and child, of one family (*Armstrong*)—had retired to rest, in their usual health, on the night of *the 9th of June. Two of them* were found the next morning dead

in bed, and a third (the child) was found in a state of insensibility, and lingered until the afternoon of the same day, when she died. The fourth, a healthy adult, retired to sleep in his bed, with his door closed, and he was found dead in *an hour*. The fifth, a child, was taken ill on the morning of the 11th, and died the same day. The sixth was taken ill on the morning of the 10th, and died on the 12th of June.

The symptoms complained of by some who recovered were nausea, sickness, giddiness, and insensiblity. On inspection of the body of one child, the pupils were found dilated—viscid mucus escaped from the nostrils—there was congestion of the lungs and kidneys, as well as of the membranes of the brain. In the adult who died in an hour, the pupils were natural, the jaws firmly clenched, the fingers contracted, and the nails blue; there was great cadaveric lividity, and a quantity of fluid with frothy mucus issued from the nostrils and mouth. The lungs were much congested, and serum was effused in the cavity of the chest. The heart contained a little fluid blood, and was somewhat flaccid. The membrane of the windpipe and gullet was redder than natural. In the windpipe there was frothy mucus. The stomach, as well as the large and small intestines, were highly congested, but otherwise healthy. The brain and its membranes were greatly engorged with blood, which, as in the body generally, was very dark and fluid. Mr. J. B. Wilson, who examined the body of the child, drew the conclusion, which was confirmed by the subsequent inquiry, that death had been caused by sulphuretted hydrogen. Dr. Thompson, who examined the body of the man, also inferred that some noxious gas or gases had destroyed life. Having been required by the Home Office to investigate the cause of death in these cases, I visited Cleator on the 22nd of June, and found that the cottages in which the accidents had occurred were built upon a heap of iron-slag, which also abutted on the premises behind. This slag contained, among other matters, sulphide of iron and sulphide of calcium. A foul smell, compared to that of cinders extinguished by water, had for some time been perceived about the rooms, chiefly at night, when the doors and windows were closed; and the day before the occurrence a heavy storm of rain had washed through the slag-heap, and aggravated the effects. The heap of slag was burning in certain parts, and sulphuretted hydrogen was evolved in large quantities at a depth of a few feet below. At the time of my visit, *i.e.* a fortnight after the deaths, on removing the flags in the lower rooms, the slag below was found damp, and sulphuretted hydrogen was still issuing from it. The white-lead paint in the closets was partly converted into black sulphuret, and this chemical change was found in patches on the chamber door of one small room in which two persons had died.

The symptoms, so far as they were observed in the living, the appearances in the dead bodies, and the chemical nature of the wet slag beneath the foundation, left no reasonable doubt that during the night, with the doors and windows closed, sulphuretted hydrogen had escaped in sufficient quantity to poison the air of a small room and destroy life, and a verdict was returned to this effect. A suggestion was made that carbonic acid might have caused the symptoms and death, but there was no source of carbonic acid but the breath; and there is, I believe, no instance known of any adult having breathed himself to death in an hour, in a room containing 600 cubic feet of air—not to mention that persons had slept in similar rooms in the same row of cottages, at a distance from the slag-heap, without perishing from such a cause. Another theory was put forward, to the effect that carbonic oxide in the vapours of some blast-furnaces had found its way into the rooms where these persons had died; but the nature of the locality and the distance of the furnaces rendered this impossible. Persons who had left their windows open, whereby these vapours *might have freely* entered, escaped, while the deaths occurred only in those

houses in which the doors and windows were completely closed. It is highly probable that the sulphuretted hydrogen was mixed with other gases and vapours, as it is never found pure except in a chemical laboratory; but the circumstances left no doubt that it was the principal agent of death. This seems to have been clearly established by the fact, that after a channel had been cut through the slag-heap, and the slag removed, no further accidents occurred.

As in reference to carbonic acid, an atmosphere containing this gas, which may be breathed for a short time with impunity, will ultimately destroy life. Sulphuretted hydrogen in a fatal proportion, however diluted or mixed with other vapours, would always be indicated by a disagreeable smell; although from habit, as well as probably from the effects of the gas on the nervous system, this offensive smell might not be perceived when a person had remained for a short time in the poisoned atmosphere. In the cases of the *Halls*, which occurred at Sheffield in 1852, there is reason to believe that the deaths of two persons were caused by the smouldering of ashes in a cesspool ('Association Medical Journal,' April 1853, p. 280). Mr. Haywood considered that carbonic acid was the agent in this case, although it is probable, from the nature of the materials in which combustion was going on, that sulphuretted hydrogen and other gases and vapours were simultaneously evolved.

Sewer gases. Effluvia of drains and sewers.—The most common form of accidental poisoning by sulphuretted hydrogen (for it is rare that a case occurs which is not purely accidental) is witnessed among nightmen and others who are engaged in cleaning out drains and sewers, or in the removal of nightsoil. These accidents are much more frequent in France than in England, the soil being often allowed to collect in such quantities in Paris and other large continental cities as to render its removal a highly dangerous occupation for the workmen. According to the results of Thénard's observations, there are two species of compound gases, or mechanical mixtures of gases, which are commonly met with in the exhalations of privies. The first compound consists of a large proportion of atmospheric air holding diffused through it, in the form of vapour, the sulphide of ammonium. The sulphide is contained abundantly in the water of the soil, and is constantly rising from it in vapour, and diffusing itself in the surrounding atmosphere. It is this vapour which gives the unpleasant and pungent odour to the effluvia, and causes an increased secretion of tears in those who unguardedly expose themselves to such exhalations. The *symptoms* produced by the breathing of this gaseous mixture, when in a concentrated state, bear a close resemblance to those which result from the action of sulphuretted hydrogen gas. If a person is but slightly affected, he will probably complain of nausea and sickness: his skin will be cold, his respiration free but irregular; the pulse is commonly frequent, and the voluntary muscles, especially those of the chest, are affected by spasmodic twitchings. If more strongly affected, he loses all power of sense and motion; the skin becomes cold, the lips and face assume a violet hue, the mouth is covered by a bloody and frothy mucus; the pulse is small, frequent, and irregular, the respiration hurried, laborious, and convulsive; and the limbs and trunk are in a state of general relaxation. If still more severely affected, death may take place immediately; or should the person survive a few hours, in addition to the above symptoms there will be short but violent spasmodic twitchings of the muscles, sometimes even accompanied by tetanic spasms. (See 'Ann. d'Hyg.' 1829, 2, 70.) If the person is sensible, he will commonly suffer the most severe pain, and the pulse may become so quick and irregular that it cannot be counted. When the symptoms are of such a formidable nature, it is rare that a recovery takes place. The *appearances* met with on making an examination of the body, are similar to those observed in death from *sulphuretted hydrogen. The* inspection should be made with caution,

for a too frequent respiration of the poisonous exhalations may seriously affect those who undertake it.

The fluid matter of cesspools is generally saturated with this gas, and contains much sulphide of ammonium, which is always escaping from it in vapour. This fluid is noxious, and if swallowed in quantity may cause death. Mr. Eager, of Guildford, communicated to me the following case (January 1867), which is in some respects singular, representing a mixed condition of suffocation by gases and drowning :—An epileptic pauper was set to clean out a large tank, used as a cesspool. It contained about two feet of a dark turbid fetid fluid, and beneath it a layer of thick solid matter. The man fell into this tank. He was rescued in about three minutes, during one-half of which time he was at intervals submerged. When removed he was partially insensible. He was placed in a warm bed, and some brandy was given to him. He was not seen by a medical man for nearly four hours: he was then in a semi-comatose state, with a cold skin, livid face and lips, a feeble pulse, oppressed breathing, with a mucous rattle in the bronchial tubes and trachea. He vomited a quantity of black fetid liquid (cesspool liquid), and after this more brandy was given to him. In a few hours the coma had partially disappeared, but there was a strong tendency to sleep. The breathing was still laboured and oppressed, and he died twenty-four hours after the accident. On an inspection of the body for a coroner's inquest, the following appearances were found:—The vessels of the stomach were much congested. This organ contained a greyish-coloured fluid. In some parts of the stomach there was ecchymosis. The cavities of the heart were filled with semi-coagulated black blood, as well as the aorta and pulmonary artery. Both lungs were gorged with black blood, in a condition resembling pulmonary apoplexy. The air-passages were filled with mucus, and the lining membrane was congested. No sulphide or sulphuretted hydrogen was found in the stomach: probably it had been removed by vomiting and absorption. It is likely that in this case the noxious fluid had been drawn into the lungs, and had there operated to interfere with respiration, as in drowning, from secondary causes.

A singular accident occurred in this metropolis in August 1847, in which a man lost his life by the evolution of a quantity of sulphuretted hydrogen from a foul drain. It appears that, shortly before the accident, a large quantity of oil of vitriol had been poured down the drain communicating with a privy. The deceased entered the privy, and was soon afterwards found on the pavement in a dying state. On inspection of the body, the brain was healthy, but the lungs were gorged with blood, which had the offensive odour of sulphuretted hydrogen gas. The medical witness referred death to this gas, and stated that lime had been thrown into the drain, that sulphuret of calcium had probably been formed, and that the sulphuretted hydrogen, which had led to the death of the deceased, had been evolved from this by the oil of vitriol. It is more probable, however, that the gas was evolved by the decomposition of the liquid sulphide of ammonium, which always abounds in such localities. Under the circumstances the lime could have had no influence in the production of the noxious gas.

The following case, which has some relation to this subject, occurred in London in 1831 :—Twenty-two boys, living at a boarding-school at Clapham, were seized in the course of three or four hours with alarming symptoms of irritation in the stomach and bowels, spasms of the muscles of the arms, and excessive prostration of strength. One child, that had been similarly attacked three days before, died in twenty-five hours, and one among the last attacked died in twenty-three hours. Both of the bodies were examined after death: in the first the mucous glands of the intestines were found enlarged and, as it were, *tuberculated*; in the second the mucous coat of the small intestines was

found ulcerated, and *that* of the colon softened. At first it was suspected that the boys had been poisoned, but an analysis of the food did not lead to the discovery of any noxious substance. The only circumstance which was considered sufficient to explain the accident was, that *two days* before the first child was seized a foul cesspool had been opened, and the materials diffused over a garden adjoining the children's play-ground. This was the source of the noxious effluvia, according to the opinion expressed by six medical practitioners. (Christison on Poisons,' p. 810.)

Analysis.—The recognition of these gases and vapours is a simple operation. The odour which they possess is sufficient to determine their presence, even when they are diluted with a large quantity of atmospheric air. The *sulphuretted hydrogen gas* is at once identified by its action on paper previously dipped in a solution of a salt of lead: if present, even in very small proportion (1-100,000th part), the moistened paper speedily acquires a brownish-black stain from the production of sulphide of lead. It must not be supposed that sulphuretted hydrogen, when it has proved fatal in a *diluted* form, can be detected in the lungs, stomach, or blood of a dead body. When the body is recently removed from a drain or sewer, the gas may be found pervading the whole of the tissues; but in other cases it will be as useless to look for it as for carbonic acid in poisoning by this gas. Noxious gases are not long retained by the tissues; a short exposure will suffice to remove all traces of them. The examination of the locality can alone throw a light upon the cause of death. The proportion of the gas found in an apartment will, however, rarely be a criterion of the quantity which has destroyed life. A person going into a room where the deceased bodies are lying may notice only a disagreeable or a stifling smell, but he may be able to breathe for a longer or shorter period with the door or window open. It is not the respiration of a few minutes, but the breathing of the diluted noxious atmosphere for many hours, that really destroys life. The best method of detecting sulphuretted hydrogen when present in a dead body (not putrefied) is to place a piece of card, glazed with lead, in the muscles or soft organs: if the gas is present, it will sooner or later be tarnished, and acquire a brown colour.

Sulphuretted hydrogen may be proved to exist by the lead-test in the vapour of sulphide of ammonium when mixed with air, and the presence of ammonia is indicated in the compound by its volatile alkaline reaction on test-paper; also by holding, in a vessel containing the vapour recently collected, a rod dipped in strong hydrochloric acid: the production of dense white fumes announces the formation of hydrochlorate of ammonia. The presence of this vapour in any mixture is at once indicated by introducing paper wetted with a solution of nitroprusside of sodium. The sulphide produces with it a rich crimson colour: if sulphuretted hydrogen alone is present, the nitroprusside paper undergoes no change. It is a fact which cannot be too universally known that a candle will readily burn in a mixture of either of these gases with air which, if breathed, would suffice to destroy life. ('Ann. d'Hyg.' 1829, 2, 69.) The candle-test should be applied with caution in places where these effluvia are collected and confined in sewers or close cesspools. When sulphuretted hydrogen is diffused in a proportion of about 7 per cent. with air it forms a dangerously explosive mixture. Dr. Perrin has lately investigated this subject, 'Mephitisme des Fosses-d'aisances.' (Ann. d'Hyg.,' 1872, 2, 73.)

It is worthy of remark that the air of a cesspool may be often breathed with safety until the workmen commence removing the soil, when a large quantity of mephitic vapour may suddenly escape, which will lead to the immediate suffocation of all present. Several persons have been killed by trusting to the previous burning of a candle, in ignorance of this fact. In descending in order to *render assistance to those who* are lifeless, the person should on these

occasions, whether sulphuretted hydrogen or carbonic acid be the cause, make a moderate inspiration of pure air and hold his breath while in the noxious mixture. In an accident which occurred at Whitechapel, in August 1857, three men died speedily from breathing the vapour of an old sewer, and two others nearly lost their lives in attempting to assist them. The best plan for getting rid of the gas is by free exposure and ventilation, or by exciting active combustion in the locality. According to Parent-Duchâtelet, men can work in an atmosphere containing from 2 to 3 per cent. of sulphuretted hydrogen. The air of one of the principal sewers of Paris gave the following results, on analysis, in 100 parts:—Oxygen, 13·79; nitrogen, 81·21; carbonic acid, 2·01; sulphuretted hydrogen, 2·99.

Another gaseous mixture in the form of deoxidized air was found by Thénard in the sewers of Paris: it was composed, in 100 parts, of nitrogen 94, of oxygen 2, and of carbonic acid 4. Sometimes the carbonic acid is combined with ammonia, and then it may be regarded chiefly as a mixture of nitrogen holding diffused through it the vapour of carbonate of ammonia, which is sufficient to render it highly irritating to the mucous membrane of the eyes and nose. Its action on the human body when breathed will be readily understood from its chemical composition. In its operation it is essentially negative, and destroys life by cutting off the access of oxygen. The small proportion of carbonic acid or of carbonate of ammonia existing in it, cannot give rise to the asphyxia which so rapidly follows its inhalation. The chances of recovery are much greater in persons who become asphyxiated from the breathing of this compound than in those who are exposed to the influence of the preceding. Commonly the immediate removal to a current of pure air is sufficient to bring about a recovery. Should death take place, it will be found on inspection that the internal appearances are the same as those which are met with in death from suffocation.

Analysis.—This compound has no offensive smell; it extinguishes a taper: the carbonic acid contained in it may be removed by caustic potash, and then it will be seen that the great bulk of the mixture is formed of nitrogen—a gas which, by its negative properties, cannot be easily confounded with any other. In a mixed atmosphere of carbonic acid and sulphuretted hydrogen, the two gases may be separated by agitating the mixture with a solution of acetate of lead, and treating the precipitate with acetic acid, which dissolves the carbonate and leaves sulphide of lead.

EXHALATIONS FROM THE DEAD.

It may be proper in this place to make a few remarks on the alleged danger of the exhalations given off by dead bodies in a state of putrescence. Formerly there existed a groundless fear relative to the examination of a putrefied dead body; and during the last century, on several important occasions, medical witnesses refused to examine the bodies of deceased persons who were presumed to have been murdered, alleging that it was an occupation which might be attended with serious consequences to themselves. Orfila has collected many accounts of the fatal effects which are recorded to have followed the removal of the dead some time after interment. (Traité des Exhumations,' vol. 1, p. 2 *et seq.*) He allows, however, that the details of most of these cases are exaggerated, and attributes to other causes the effects which followed. Indeed, the observations of Thouret and Fourcroy prove that these dangers are restricted within a narrow compass, and that in general with common precautions dead bodies may be disinterred, and transported from one locality to another, without any risk to those engaged in carrying on the exhumations. About the latter part of the last century, from fifteen to *twenty thousand* bodies, in almost every stage of putrefaction, were removed

from the Cimetière des Innocens in Paris; and the accidents that occurred during the operations, which lasted ten months, were comparatively speaking few. The workmen acknowledged to Fourcroy that it was only in removing the recently interred corpses, and those which were not far advanced in decomposition, that they incurred any danger. In these cases the abdomen appeared to be much distended with gaseous matter; if ruptured, the rupture commonly took place about the navel, and there issued a bloody fetid liquid, accompanied by the evolution of a mephitic vapour—probably a mixture of carbonic acid and sulphuretted hydrogen. Those who breathed this vapour, as it escaped from the body, fell instantly into a state of insensibility and died; while others who were at a distance, and who consequently breathed it in a diluted state, were affected with nausea, giddiness, or fainting, lasting some hours, and followed by weakness and trembling of the limbs. Some years since, when it was the practice to bury the dead in the crowded churchyards of London, lives were frequently lost by reason of the noxious gases and effluvia which at once filled every grave as it was made. These gases were chiefly carbonic acid and sulphuretted hydrogen: they have been already fully described (vol. i. p. 95). A grave twenty feet deep was usually dug between strata of exposed coffins, and this grave was kept open until it was filled with bodies. In September 1838 two persons were killed by the effluvia which had collected in one of these deep graves kept open in Aldgate Churchyard. (See, in reference to this subject, Henke's 'Zeitschrift,' 1840, vol. 2, p. 446; 'Ann. d'Hyg.' 1832, p. 216; 1840, p. 131; 1840, pp. 28, 32.) With ordinary precautions, and the use of well-known deodorizers, the remains of the dead may be removed and transported to other localities without injury to the living. Within a few years many bodies have been thus removed, without ill effects, from London cemeteries, as that of St. Andrew's, Holborn, and Old St. Pancras. Some remarks on this subject by M. Devergie will be found in the 'Ann. d'Hyg.' 1869, 2, 78.

In addition to these exhalations from the dead, there are other gases and vapours of a poisonous nature which are for the most part artificial products. It is seldom that individuals are exposed to breathe them in such quantity as to cause serious symptoms or to endanger life.

LIGHTNING. COLD. HEAT. STARVATION.

CHAPTER 59.

LIGHTNING—EFFECTS OF THE ELECTRIC FLUID—CAUSE OF DEATH—POST-MORTEM APPEARANCES—CASES—LEGAL RELATIONS—COLD AN OCCASIONAL CAUSE OF DEATH—SYMPTOMS—CIRCUMSTANCES WHICH ACCELERATE DEATH—POST-MORTEM APPEARANCES—CASE OF MURDER BY COLD—EFFECT OF HEAT—STARVATION A RARE CAUSE OF DEATH—SYMPTOMS—APPEARANCES AFTER DEATH—LEGAL RELATIONS.

LIGHTNING.

Effects of the electric fluid.—Death by lightning is sufficiently common to require that a medical jurist should be prepared to understand the phenomena which accompany it: but there is a more important reason why he should devote some attention to this subject—that is, that the appearances left by the electric fluid on the *human body* somtimes closely resemble those produced

by great mechanical violence. Thus a person may be found dead in an open field, or on the highway; his body may present the marks of contusion, laceration, or fracture; and to one unacquainted with the fact that such violence occasionally results from the effect of this subtle force, it might appear that the deceased had been maltreated and probably murdered. The greater number of deaths from the electric fluid take place during the spring and summer. According to one annual report, there were 24 deaths from lightning registered during the year, occurring in the following seasons:—Summer, 11; spring, 10; autumn, 2; winter, 1. Out of 103 deaths from lightning in five years (1852–56), there were 38 in the month of July and 22 in August.

In fourteen years (1853–65) 242 deaths from lightning were registered in England and Wales, of which 199 were males and 43 were females. The numbers in each year fluctuate considerably. Nearly all the deaths took place among persons engaged in work out of doors, *i.e.* field-labourers and others. We do not often hear of persons being killed by lightning in dwellings. In 1870 there were nineteen deaths registered from lightning.

Cause of death.—The electric fluid appears to act fatally by producing a violent shock to the brain and nervous system. In general there is no sense of pain; the person falls at once into a state of unconsciousness. In a case which did not prove fatal, the person, who was seen soon after the accident, was found labouring under the following symptoms:—insensibility; deep, slow, and interrupted respiration; entire relaxation of the muscular system; the pulse soft and slow; the pupils dilated, but sensible to light. ('Med. Gaz.' vol. 14, p. 654.) It will be seen that these are the usual symptoms of concussion of the brain. The effect of a slight shock is that of producing stunning; and when persons who have been severely struck recover, they suffer from noises in the ears, paralysis, and other symptoms of nervous disorder. ('Med. Times,' July 15, 1848.) Insanity has even been known to follow a stroke of lightning. (Conolly's 'Report of Hanwell,' 1839.) In one case the person remained delirious for three days, and when he recovered he had completely lost his memory. ('Lancet,' August 3, 1839, p. 582.) A boy, æt. 4, received a severe shock on the 11th May, was seized with tetanus on the 13th, and died in four hours. ('Med. Times and Gaz.' May 26, 1855.) In another instance an old man who took shelter under a tree felt as if a vivid flash had struck him in the face: he did not fall, but he became almost blind. He suffered for some days from frontal headache, and loss of sight supervened. ('Med. Times and Gaz.' July 24, 1858.)

It may be observed of the effects of lightning, generally, that death is either immediate, or the individual recovers. A person may however linger, and die from the effects of severe lacerations or burns indirectly produced. A case occurred in this city, in July 1838, where death was thus caused indirectly by the effects of electricity. The following case of recovery illustrates further the action of the electric fluid:—Three persons were struck by lightning at the same time. In one, a healthy man, æt. 26, the symptoms were severe. An hour and a half after the stroke he lay completely unconscious, as if in a fit of apoplexy; his pulse was below 60, full and hard; his respiration snoring, his pupils dilated and insensible. There were frequent twitchings of the arms and hands; the thumbs were fixed and immovable, and the jaws firmly clenched. Severe spasms then came on, so that four men could scarcely hold the patient in his bed; and his body was drawn to the left side. When these symptoms had abated he was copiously bled; cold was applied to the head, a blister to the nape of the neck, and mustard-poultices to the legs. Stimulating injections and opium were also administered: in the course of twenty-four hours consciousness slowly returned, and the man soon completely recovered. The only external injury discoverable was a red streak, as broad

as a finger, which extended from the left temple over the neck and chest: this disappeared completely in a few days. ('Brit. and For. Med. Rev.' Oct. 1842.) These red streaks or marks sometimes assume a remarkable disposition over the skin. (See case by Dr. Horstmann, Casper's 'Vierteljahrsch.' April 1863, p. 308.)

Appearances after death.—The suddenness of death is such that the body sometimes preserves the attitude in which it was struck. ('Med. Times and Gaz.' Feb. 18, 1860, p. 167.) Generally speaking there are, externally, marks of contusion and laceration about the spot where the electric current has entered or passed out; sometimes a severe lacerated wound is found; on other occasions there has been no wound or laceration, but an extensive ecchymosis, which, according to Meyer, is most commonly seen on the skin of the back. In one instance, which occurred in London in May 1839, there were no marks of external violence; and several similar cases are quoted from American journals in the 'Medical Times' (May 3, 1845, p. 82). The clothes are in almost all cases rent and torn, and partly singed, giving rise to a peculiar odour of burning—sometimes even rolled up in shreds and carried to a distance. They are occasionally found partially burnt, but this is not a frequent occurrence. Metallic substances about the person present traces of fusion, and articles of steel have been observed to acquire magnetic polarity. Dr. West informed me that, in a case to which he was called, in which a boy, æt. 18, had been instantly struck dead by lightning, he observed that a knife in the pocket of the deceased had acquired strong magnetic polarity. This case further shows that which has frequently been noticed—namely, while much violence has been done to the dress, the parts of the body covered by it, have escaped injury. The deceased wore at the time of the accident a pair of strong leather boots: these were torn to shreds, probably owing to the presence of iron nails in the soles, but the feet of the deceased presented no marks of injury! An accident by lightning occurred in the presence of a friend of mine, by which a healthy man was instantaneously killed. A cap which the man wore had a hole through it; his hair was singed, his shoes were burst open, and his trousers torn. The woodwork of the building down which the electric fluid passed was merely split, and there was no mark of burning. I have examined, in several instances, the wood of trees which have been struck by the electric fluid; in each case it has presented only the appearance of rending by mechanical force.

Wounds and burns are sometimes met with on the body. The wounds have commonly been lacerated punctures, like stabs produced by a blunt dagger. In the case of a person who was struck but not killed, a deep wound was produced in one thigh, almost laying bare the femoral artery. This person was struck, as many others have been, while in the act of opening an umbrella during a storm. Fractures of the bones have not been commonly observed: in a case mentioned by Pouillet, the skull was severely fractured, and the bones depressed. ('Traité de Physique, Elect. Atmosph.') In May 1864 Dr. Mackintosh, of Littleport, was called to see three persons who had been struck by lightning about *twenty minutes* previously. They had taken shelter under a haystack, which had been set on fire by the same flash. 1. A boy, æt. 10, was then able to walk, although unable to move his legs immediately after the occurrence. All that he remembered was—he saw the stack on fire, and called to his father; he felt dizzy all over, and unable to move. His hair and clothes were not singed, and the metallic buttons on his dress showed no signs of fusion. On removing his clothes a slight odour of singeing was perceptible. He complained of pain at the lower part of the abdomen. There were several red streaks, of about a finger's breadth, running obliquely downwards and inwards on either side of the chest to the middle line in front of the abdomen; they then descended over the pubes, and were lost in the perineum. It does

not appear that there was any abrasion of the skin. This boy perfectly recovered; the red streaks disappeared gradually, and could hardly be traced four days after the injury. 2. Another boy, æt. 11, lay prostrate and unconscious, with an expression of grim terror and suffering; he frothed at the mouth, moaned piteously, and flung his legs and arms about in all directions. The respiration was deep, slow, and laborious; the heart palpitating, pulse weak and very irregular; the pupils were dilated, and insensible to light. There were in this case several red streaks converging from the neck and shoulders to the middle of the chest-bone, and passing over the abdomen until they were lost on the pubes. There were similar streaks radiating for a few inches from the tuberosity of the ischium on each hip in different directions, until they were lost in the skin. It appears that this boy was in a sitting posture when struck. The hair on the back of his head and neck was singed, and the peculiar odour of singeing was perceived, although his clothes showed no traces of burning, nor the metallic buttons of fusion. The boy became conscious in five hours, and rapidly recovered. The red streaks gradually disappeared, leaving streaks of a scaly glistening white appearance, which ultimately left no trace of their existence. 3. A man, æt. 46. Like the two others, he was in a sitting posture, and he appeared to have been killed on the spot: he had not moved hand or foot. The countenance was placid, and the pupils were widely dilated. The electric fluid had produced a large *lacerated wound* of the scalp, at the junction of the occipital with the parietal bones, but without causing any fracture. It appeared to have passed down each side of the head, between the soft parts and the cranium. On the left side it had passed downwards in front to the left ear, and terminated at the side of the neck, rupturing blood-vessels and muscles, and causing swelling of the parts, with effusion of blood. It presented the appearance of an extensive bruise caused by mechanical violence. On the right side the current had passed down to the space above the collar-bone, causing lividity and swelling of the right ear as well as of the adjacent skin; and it terminated in a dark-blue mangled patch of skin, in which there were several free communications with the surface. The hair on the back of the head was slightly singed, and that in front of the chest was singed quite close to the skin, but the hair which covered the wound in the scalp, where the current had entered, was uninjured. The clothes were neither torn nor burnt, and the metallic buttons were not fused. The clothes of all three were at the time very wet. The hat was not examined. The left side-pocket of the trousers contained several lucifer-matches and a tin tobacco-box, which were unaffected by the electric discharge. The right pocket contained a knife, which had acquired strong magnetic polarity. The body was placed in a warm room, and it is worthy of remark that cadaveric rigidity came on in fourteen hours after death. ('Lancet,' July 30, 1864, p. 118.) It is to be regretted that no post-mortem examination was allowed. It is probable that the brain sustained severe injury, causing immediate death. These cases singularly present the effects of lightning in three degrees—the effect of a slight shock in No. 1, of a severe shock in No. 2, and of a fatal shock in No. 3. There was but little bodily injury in either case, and no appearance of burning. The marks on the skin in Nos. 1 and 2 could not have been mistaken for violence, but the wound to the scalp and the injuries to the neck in No. 3 might have been ascribed to the violence of another, had not the circumstances been fully known. The clothes probably escaped burning or tearing by reason of their being wet, and their readily conducting the electric fluid.

Ecchymoses of greater or less extent are sometimes found on the bodies of those who have been killed by lightning. These ecchymoses have been occasionally disposed in an arborescent form over the surface of the skin. When *persons have been killed* while standing under or near trees, and such arbores-

cent ecchymoses are found, they have been fancifully described as presenting the picture of a tree. This has even formed a subject for medical evidence at an inquest, in a case of death from lightning. ('Australian Med. Jour.' Sept. 1870, p. 295.) A youth was killed by lightning. There were marks of contusion on the left side of the body, and it was noticed that there was extreme rigidity on this side. The hair on the back of the head was burnt off. The pupils of both eyes were much dilated, and blood oozed from the left nostril. The surgeon then stated that he observed on the skin of the chest the perfect impression of a young tree inverted, of a dark colour, as if tattooed on the skin. It resembled the trees which grew near the place of the accident! The deceased, when struck had two or three layers of woollen cloth buttoned over his chest: his cap was torn to pieces. The trousers on the left side were rent from the hip to the stocking, which was torn open as well as the boot. The deceased had died from injury to the brain.

The *burns* occasionally found on the bodies of persons who have been struck by lightning have been hitherto ascribed to the ignition of the clothes. It appears, however, from the subjoined cases, that burns even of a severe kind may be the result of a direct agency of the electric fluid itself upon the body. The late Dr. Geoghegan met with the case of a girl who had been struck by lightning; there was a burning of the thigh and buttocks to the first and second degrees, but the clothes did not show any signs of combustion. I am indebted to Mr. Fisher, of Dudley, for a more detailed account of a case illustrating the same point. On the 16th of July 1852 a man, æt. 23, while engaged in milking a cow in a wooden shed, during a severe thunderstorm, suddenly observed a vivid flash of lightning which killed the cow instantly, and inflicted serious injuries upon himself. Mr. Fisher saw him sixteen hours after the accident, and found a severe burn on his person, extending from the right hip to the shoulder, and covering a large portion of the front and side of the body. His mind was then wandering, and there were symptoms of inflammatory fever. The man was confined to his bed for seventeen days, at the end of which time the injuries had not perfectly healed. On examining his dress the right sleeve of his shirt was found burnt to shreds, but there was no material burning of any other part. The case is singular, inasmuch as it shows that the dress may be burnt without the surface of the body being simultaneously injured; and further, that a burn may be produced on the body, although the clothes covering the part, may have escaped combustion. Mr. Fleming has described the cases of eight persons who were struck by lightning, and on the bodies of some of these there were marks of severe burns. The dresses were, in parts, much singed. These cases show, in a remarkable manner, the intense heat evolved in the instantaneous passage of the electric fluid through the clothes and body. The persons struck were benumbed or paralysed in various degrees, but all ultimately recovered. The burns were so severe that some months elapsed before they were entirely healed. ('Glasgow Med. Journal,' Oct. 1859, p. 257.) A man was struck by lightning in July 1861: he was seen by Mr. Hill. Externally there was a burn upon the nape of the neck, where the metallic watch-guard rested, and from the point where the current of electricity left the chain, the skin was blistered in a straight line down to the feet, scorching the hair of the pubes in its course. His intellect was confused, and his general condition was that of collapse. With the aid of stimulants he became sufficiently restored to communicate his feelings. There was paralysis of the lower extremities, with loss of sensibility (anæsthesia), and retention of urine. He was deaf, and complained of a noise in his ears like thunder; he had some difficulty in articulating, and pain in swallowing, with a peculiar metallic taste in his mouth. The anæsthesia passed away in half-an-hour, but he did not completely recover the *use of his limbs* for four days; the bladder was para-

lysed for twenty-four hours, and only relieved by the catheter of a highly-coloured urine with abundance of phosphates. The bowels were confined. All these symptoms gradually disappeared, excepting slight deafness, and he was discharged convalescent.

The following complete account of the external and internal appearances found in the body of a healthy middle-aged labourer, who was killed by a stroke of lightning, has been published by Dr. Schaffer :—The man was working in the field with several other labourers, just after a thunderstorm had passed over and had apparently subsided. He was endeavouring to kindle a light with a flint and steel, when the lightning struck him. For a moment after the shock he stood still, and then fell heavily to the ground dead. The electric fluid had entered at the upper part of his forehead, perforating and tearing his hat at that part : it seemed then to have been divided into two currents, which passed down the sides of the body, along the lower limbs and out at the feet. On the upper part of the forehead was found a soft swelling, of a dark-blue colour, and about the size of the palm of a hand : the hair which covered it was uninjured. From this spot two dark-red streaks proceeded in different directions. One of these passed to the left, running over the temple, in front of the left ear, down the neck to the surface of the chest, over which it passed between the left nipple and the armpit; and so made its way over the body to the left inguinal region, where it formed a large, irregular, scorched-looking (brandige) patch on the skin. From this point the dark-red streak again continued its downward course, passing over the great trochanter, then along the outer surface of the left leg to the back of the foot, where it terminated in several small dark-blue spots. The other streak, which proceeded from the ecchymosed swelling on the forehead, passed directly to the right ear, which was considerably swollen and of a dark-blue colour : from the ear it ran downwards and backwards along the neck, crossed the right border of the scapula, and eventually reached the right groin, where a scorched patch of skin, similar to that in the left groin, was found. From this part the discoloured streak continued down the outer side of the right leg, to its termination on the back of the foot, just as on the left side. It is remarkable that although the hair on the forehead, as well as that which occurred in any part of the track taken by the electric current down to the groin, was not burnt, yet at the groin itself, and at every part between this and the foot over which the electric stream had passed, the hairs were completely burnt. The cause of the skin and hair in the groin being burnt is probably to be referred to the buckles of a belt which the man wore round his abdomen at the time of the accident : the belt was completely destroyed. Nothing further worthy of notice was observed on the exterior of the body, with the exception of the face being very red. The swelling of the head was found to be due to the presence of a large quantity of extravasated blood. The bone beneath was not injured. Blood was effused in other parts of the scalp corresponding to the swollen discoloured patches outside; about four ounces had been effused. The vessels of the cerebral membranes were much congested, and the brain itself contained a large quantity of blood, especially the choroid plexuses. A large quantity of reddish mucus was found in the larynx, windpipe, and air-tubes. The lungs were loaded with dark blood; there was a great deficiency of blood in the cavities of the heart and in the large vessels. The blood-vessels of the stomach and intestines were more than usually congested. The right lobe of the liver was of a dark-red colour, and loaded with blood, especially the part which corresponded to the burnt patch of skin at the lower part of the abdomen. The spleen also was large, and filled with blood. Much blood was found accumulated in the substance of the muscles of the abdomen, at those parts which lay beneath the burnt surfaces outside. (*'Oesterreich. Med. Wochenschrift,'* 6th June 1846.) It was

formerly supposed that the blood was never found coagulated in persons killed by lightning, and that the body did not become rigid after death. From these and other facts elsewhere related, it will be perceived that these statements are not correct.

In the case of an old man killed by lightning, the external surface of the body presented slight marks of violence, except the left ear, which was severely lacerated. On opening the head, the left hemisphere of the brain was found entirely disorganized, forming a homogeneous mass, almost liquid, of a greyish colour, and without a vestige of normal structure, except a small portion of the corpus striatum, which had retained its natural appearance and situation. The left lung was partly injured. The skin of the abdomen was marked by black longitudinal superficial lines. On the skin of the left ankle there was an ecchymosed spot, and in the foot a deep wound. The hat and shoes of the deceased had been destroyed, but the rest of his clothes were uninjured. ('Heller's Journal,' Feb. 1845, p. 245.) Mr. Clark, of Farnham, met with a fatal case of lightning-stroke in May 1872, which is of interest chiefly in reference to the time during which the patient survived (two days) in spite of severe injuries to the head. A man æt. 74, while standing under a fir-tree, was struck during a storm and suddenly thrown on his face. He was seen soon afterwards, was then moaning and quite unconscious; the legs were paralysed, and the arms partially so. His hat, jacket, waistcoat, trousers, and one boot, were rent and ripped open. Blood was flowing from a serrated wound over the right temple, from several small wounds over the head and face, and also from the mouth, which was lacerated. There was no ecchymosis or contusion near any of the wounds. He passed a restless night, still moaning, pulse 80, weak, irregular, and intermittent; breathing deep and hurried, and he was unable to speak. The bladder was paralysed. No fracture could be discovered, and the bleeding had ceased. In twenty-seven hours the symptoms had become aggravated; he was very violent, and much ecchymosis appeared around the right eye. The hair on the right side of the head, eyebrows, eyelashes, and whiskers, in some parts, were quite burnt off, and in others scorched, as was also the hair on the trunk over the pubes and down the right leg, the cuticle in many places being completely charred. Some blood oozed from the mouth and nose, the palate was charred and black, the mouth drawn a little to the left side, the tongue dry and brown. He passed another restless night: twitchings of the muscles came on, with facial paralysis, and he died without recovering consciousness fifty-seven hours after he had been struck. On inspection much blood was found effused between the scalp and skull. A fine fracture one inch and a quarter long, was found in the squamous portion of the temporal bone, terminating at the suture. There was another fracture at right angles to this, the included portion of bone being black and charred. The temporal bone was forced out and raised above the level of the other bones. On the dura mater, corresponding to this fracture, there was an effusion of thick blood. The membranes of the brain were torn and the substance of the brain lacerated. A charred spot was seen on the orbitar plate of the frontal bone, through which the electric current had passed. ('Lancet' 1872, 1, 77.) Even had the facts of this case not been known, and the man had been found dead, the injuries could not have been mistaken for those of homicidal violence. The rent condition of the clothes and the burning and scorching of the hair, with the charring of the wounds and of the bone at the seat of fracture, would have been clear marks of distinction from homicidal violence. The temporal bone was fractured and raised, and not depressed as it would be from a severe blow, nor was there any distinct mark of a blow on the outside to account for so much internal violence. The following appearances were found in the body of Professor *Rickman, who was killed at St. Petersburg*, in 1753, while engaged in some

experiments on atmospheric electricity. On the left side of the forehead, where the deceased had been struck by the electric current, there was a round ecchymosed spot. There were eight other patches of ecchymosis, of variable size, extending from the neck to the hip, principally on the left side. Some of these, situated on the trunk, resembled the marks produced by gunpowder when discharged in contact with the skin. The left shoe was torn open at the buckle, without being singed or burnt; but the skin around was slightly ecchymosed. Internally a quantity of blood was found extravasated in the windpipe, the lungs, and the layers of the omentum. The omentum presented the appearance of having been violently contused. (Murbach's 'Encyklopädie, Blitz;' also Henke's 'Zeitschrift der S. A.,' 1844, 1, 193.)

Ranke has endeavoured to determine the relative conducting power of living muscle which constitutes so large a portion of the body. The conclusion at which he has arrived is that the conducting power of muscle in reference to electricity is three-million times weaker than that of mercury, and fifteen million times below that of copper. (Brown-Séquard, 'Proc. R. S.,' No. 44.) Notwithstanding these results the human body is often struck under circumstances where, according to theory, it should escape. It is also worthy of note that of three or more persons together one or two only may be struck, although there is no apparent reason why the electric fluid should select one body more than another. M. Tourdes met with the following cases in 1869:—Three soldiers were sitting under a tree during a storm. They were struck down by lightning and two were killed on the spot. There were loftier trees in the neighbourhood—a lightning conductor was not far off, and an iron railway bridge and a river were near. The electric fluid struck the lower tree and passed through the bodies of the men in place of being carried off by the surrounding conductors. ('Ann. d'Hyg.' 1871, 1, 478.) In June 1871, a coachman while driving a carriage was killed on the box during a storm, while the footman sitting by his side escaped uninjured. The electric fluid had struck the coachman on the head, destroyed his hat, and rent his clothes. It passed through his body, tore a large hole in the cushion on which he was sitting, and except the shattering of the glass did no injury to the carriage nor to those who were inside. At about the same time three men were mowing in a field during the storm. They put down their scythes and sought shelter; but as they were leaving the field, they were all three struck to the ground by lightning. One only was killed. It was found that he had been struck on the right side, where he wore a steel chain with a watch. This was broken to pieces. In another accident occurring at the same date, a man æt. 74 was struck while standing under a fir-tree. He was taken up in an insensible state, and soon died. There was a jagged wound over the right eye, and a great part of the surface of the body was burnt, including the hair, whiskers, eyebrows, and eyelashes. The boots were burnt off the feet, and the hat and trousers were torn to pieces. In these cases no doubt one body received more of the electric fluid than another, and in the fatal cases there were appearances in the condition of the bodies and the clothes sufficient to point to death by lightning even if the facts had not been known.

Legal relations.—Rare as the combination of circumstances must be in which a medico-legal question can arise in reference to the action of the electric fluid on the body, a case was tried in France, in October 1845, in which medical evidence respecting the characters of wounds caused by electricity was of considerable importance. In August of that year some buildings were destroyed at Malaunay near Rouen, as it was alleged, on the one side by a thunderstorm, on the other by a whirlwind; and as the parties were insured against lightning, they brought an action for recovering the amount insured. The evidence *in favour of the accident* having been due to electricity consisted,—first, in

the alleged carbonized appearance of the leaves of some of the trees and shrubs growing near; and secondly, in the characters of the wounds on the bodies of several persons who were injured at the time of the occurrence. M. Lesauvage stated at the trial that there was an appearance of dark stains scattered over the bodies, and that those who survived suffered from torpor, pains in the limbs, and a partial paralysis of motion. He observed, also, that decomposition took place very speedily in the bodies of those who were killed. In one instance the muscles were torn and lacerated, and some small arteries divided. This witness attributed most of the wounds to the effects of electricity. M. Funel deposed, that in some of the dead bodies which he examined the face and neck were bloated and discoloured, as if death had taken place from asphyxia. It does not appear, however, that there were any circumstances decisively proving that the buildings had been destroyed by lightning. M. Pouillet has given an accurate description of the storm: he believed that although, as deposed to by some of the witnesses at the trial, it may have been attended with thunder and lightning, the buildings with the surrounding trees were overthrown by the mere force of the wind, and not by the electric fluid. The description given bears out this view, but at the same time it is unusual that trees when struck, unless old or dry and withered, should present any marks of combustion about the leaves or trunk. (See 'Comptes Rendus,' Sept. 1845; also 'Med. Gaz.' 36, 1133.) The scientific evidence was of the most conflicting kind. The Royal Court of Rouen decided that the disaster was occasioned by the atmosphere; and, without entering into the various theories of storms, condemned the insurance companies to pay the amount claimed. ('Law Times,' March 14, 1846, p. 490.)

COLD.

Cause of death.—The protracted exposure of the human body to a low temperature may destroy life; and although in this country cases but rarely occur in which cold alone operates fatally, it is not unusual, during a severe winter, to hear of persons, in a state of poverty and destitution, being found dead in exposed situations. On these occasions we may reasonably suspect that the want of proper food and nourishment has accelerated death. It is, however, convenient to make a distinction between the effects of cold and of starvation on the system, as the symptoms preceding death and the rapidity with which it takes place are different in the two cases. According to the Registrar-General's return there were 141 deaths from cold in 1870.

Symptoms.—A moderate degree of cold is well known to have an invigorating effect upon the body; but if the cold be severe, and the exposure to it long-continued, while the calorific function is not maintained by warmth of clothing, exercise or food, the skin becomes pale, and the muscles become gradually stiff and contract with difficulty, especially those of the face and extremities. Sensibility is lost, a state of torpor ensues, followed by profound sleep, from which the person cannot be readily roused; in this state of lethargy the vital functions gradually cease, and the person finally perishes. Such are the general effects of intense cold upon the body: its influence on the nervous system is seen in the numbness, torpor, and sleepiness which have been described as consequences of a long exposure to severe cold. Giddiness, dimness of sight, tetanus, and paralysis have in some cases preceded the fatal insensibility. It has been found that temperature materially affects the amount of oxygen taken by the blood. At a low temperature it takes less oxygen; hence the blood becomes less oxygenated, and this state of the blood affects the condition of the nervous system. (Bernard, op. cit. p. 114.) It was observed during the retreat of the French from Moscow, that those who were most severely affected by *cold often reeled about as if* in a state of intoxication; they also

complained of giddiness and indistinctness of vision, and sank under a feeling of lassitude into a state of lethargic stupor, from which it was found impossible to rouse them. Sometimes the nervous system was at once affected; tetanic convulsions, followed by rigidity of the whole of the voluntary muscles, seized the individual, and he rapidly fell a victim. Symptoms indicative of a disturbance of the functions of the brain and nervous system have also been experienced by Arctic travellers during their residence within the Polar circle. Under the name of *Coldstroke* Dr. Hartshorne has described a case showing the fatal effects of a slight exposure to intense cold suddenly applied to the body. A youth æt. 14 exposed himself for a few minutes in his night-dress at an open window, during a winter's night, the thermometer having fallen 50° from the day temperature. He felt thoroughly chilled, and the next day he was suffering from headache, drowsiness, and vomiting—the skin hot, the pulse hard and quick. On the second day he became restless and delirious, and on the following morning he died. There was no cause for this fatal attack of illness excepting the few minutes' exposure on removing from a warm bed to the piercing wind of a cold winter's night. Other instances are recorded in which persons have become delirious, and died from the effects of slight exposure to severe cold. (Amer. Jour. Med. Sci. October 1861, p. 432.) Many of the fatal cases registered during a severe winter are owing to this direct effect of cold. A complete history of the effects of cold and the phenomena connected with this kind of death is given by Dr. Höche, of Zeitz, in Horn's 'Vierteljahrsschrift' for 1868, 2, 44.

Circumstances which accelerate death.—There are certain conditions which may accelerate death from cold. In all cases in which there is exhaustion of the nervous system—as in those who are worn out by disease or fatigue, in the aged and infirm, or lastly, in persons who are addicted to the use of intoxicating liquors, the fatal effects of cold are more rapidly manifested than in others who are healthy and temperate. It has been uniformly remarked that whenever the nervous energy is impaired, either by intoxication or exhaustion from fatigue, a man dies quickly from cold. The exposure of drunken persons, during a severe winter night, may therefore suffice to destroy life, although the cold might not be so intense as to affect others who were temperate. Casualties of this nature sometimes occur during the winter season in this metropolis; and a knowledge of the influence of intoxication, in accelerating death under such circumstances, may occasionally serve to remove a doubt in the mind of a medical man respecting the real cause. Infants, especially when newly born, easily perish from exposure to cold. Cold, when accompanied by rain and sleet, appears to have a more powerfully depressing influence than when the air is dry, probably from the effects of evaporation. The following case by Dr. Currie shows the fatal effects of cold winds accompanied by humidity:—'Of several persons who clung to a wreck, two sat on the only part that was not submerged; of the others, all were constantly immersed in the sea, and most of them up to the shoulders. Three only perished, two of whom were generally out of the sea, but frequently overwhelmed by the surge, and at other times exposed to heavy showers of sleet and snow, and to a high and piercing wind. Of these two, one died after four hours' exposure; the second died three hours later, although a strong healthy adult, and inured to cold and hardship; the third that perished was a weakly man. The remaining eleven, who had been more or less completely submerged, were taken from the wreck the next day, after twenty-three hours' exposure, and they recovered. The person among the whole who seemed to have suffered least was a negro: of the other survivors, several were by no means strong men, and most of them had been inured to the warm climate of Carolina.' The fatal action of extreme cold in causing the death of

animals has been lately examined by M. Crecchio. ('Ann. d'Hyg.' 1838, 1, 436.)

Appearances after death.—Opportunities rarely occur of examining bodies when death results purely from exposure to cold. The skin is commonly pallid, and the viscera of the chest and abdomen as well as the brain are congested with blood. Dr. Kellie, of Leith, found, in two cases which he examined, a redness of the small intestines from the congestion of the capillary vessels, and a great effusion into the ventricles of the brain. A sufficient number of cases have not yet been inspected to enable us to determine how far these two last-mentioned appearances are to be regarded as consequences of death from cold, but all observers have found a general congestion of the blood-vessels and viscera. In consequence of the great congestion uniformly met with in the vessels and sinuses of the brain, some pathologists have regarded death from cold as resulting from an attack of apoplexy; but the symptoms which precede death do not bear out this view. Effusions of blood have not yet been observed, and a mere fulness of the cerebral vessels after death is not in itself sufficient to justify this opinion. It will be observed that, on the whole, these appearances are remarkably similar to those which are found in death from severe burns and scalds. In a case which occurred to Dr. Hilty, of Werdenberg, a man æt. 57, in a state of intoxication, died from exposure to cold during a severe winter's night. A minute description of the appearances is given, but the principal were, great congestion of blood in all the cavities of the heart and the large vessels, the blood fluid and of a dark crimson colour, a congested state of all the internal organs, especially of the liver and kidneys, numerous spots or patches of redness on the skin (frosterythema) and the bladder distended with urine. (Casper's 'Vierteljahrsschrift,' 1865, 2, 140.)

The appearance above described cannot be regarded as very characteristic of death from cold, and a medical jurist will perceive, that in order to come to a decision whether, on the discovery of a dead body, death has taken place from cold or not, is a task of some difficulty. The season of the year—the place and circumstances under which the body of the deceased is found—together with the absence of all other possible causes of death (such as from violent injuries or internal disease), form the only basis for a safe medical opinion. Death from cold is not to be determined except by negative or presumptive evidence; for there is no organic change, either externally or internally, sufficiently characteristic of it to enable a medical man to give a positive opinion on the subject.

Case of murder by cold.—The following case involved the question of the fatal effects of cold upon the body. A man and his wife, residing at Lyons, were tried for the murder of their daughter, a girl æt. 11, under the following circumstances:—On the 28th December, at a time when there was a severe degree of cold, the woman compelled the deceased to get out of her bed and place herself in a vessel of ice-cold water. The child cried and endeavoured to escape from the bath, but she was by violence compelled to remain in the water. The deceased soon complained of exhaustion and dimness of sight: the prisoner then threw a pail of iced water upon her head, soon after which the child expired. Death was properly ascribed to the effects of this maltreatment, and the woman was convicted. ('Ann. d'Hyg.' 1831, p. 207; see also 'Med. Times and Gazette,' July 21, 1860, p. 61.) This case presents a refinement of cruelty which is rarely met with in the annals of crime. Such a case could only be proved by circumstances; for there would be no appearances in the body, internally or externally, to indicate the mode of death. We learn by this case, that the death of infants or children may be caused by the external application of cold liquids to the skin, coupled with exposure. It would also

appear, from the facts, that the brain and nervous system are sympathetically affected through the skin, and not through the introduction of cold air into the lungs. Indeed it is well known, from the experience of Arctic travellers, that air of a temperature considerably below zero may be breathed without risk, provided the skin is kept warm.

In *Reg.* v. *Lovell* (Gloucester Lent Assizes, 1853) a woman was convicted of the manslaughter of a child æt. 4. The child, it seems, was in a diseased condition, and the prisoner, during the month of January, placed her under a pump in the yard, and turned the cold water upon her. The medical witness did not consider that this accelerated death, but the jury returned a verdict of guilty; and on passing sentence the late Mr. Justice Talfourd observed, that the verdict was based on common sense and reason, although against the opinion of the medical witness!

HEAT.

Intense heat.—The effect of an intensely heated atmosphere in causing death has been but little studied. I have been consulted in one case, in which the captain of a vessel was charged with manslaughter, for causing a man to be lashed within a short distance of the stoke-hole of a steam-furnace in the hold of a vessel. The man died, apparently from the effects of this exposure. The engine-rooms of steamers in the tropics have been observed to have a temperature as high as from 145° to 150°; and engineers after a time become habituated to this excessive heat, without appearing to suffer materially in health. In the Turkish-bath, higher temperatures than this have been noted, but there is reason to believe that serious symptoms have been occasionally produced in persons unaccustomed to them, and that in one or two cases death has resulted. In attempting to breathe air heated to temperatures varying from 180° to 200°, there is a sense of suffocation, with a feeling of dizziness and other symptoms indicative of an effect on the brain; the circulation is enormously quickened.

In July 1861 an inquest was held in London on the body of a stoker of an Aberdeen steamship. He had been by trade a grocer, and was not accustomed to excessive heat. While occupied before the engine-furnace, he was observed to fall suddenly on the floor in a state of insensibility: when carried on deck it was found that he was dead. All that was discovered on a post-mortem examination was an effusion of serum into the ventricles of the brain: death had been caused by sudden apoplexy. It is probable that excessive heat generally operates fatally by producing apoplexy, *i.e.* heat-apoplexy. In some cases a person may sink and die suddenly from exhaustion, or symptoms of cerebral disturbance may continue for some time, and the case ultimately prove fatal.

In 1870, 112 deaths from sunstroke were registered in England.

Death from sunstroke, when not immediately fatal, is preceded by some well-marked symptoms, such as weakness, giddiness, headache, disturbed vision, flushing of the face, followed by oppression and difficulty of breathing, and in some cases stupor passing into profound coma. The skin is dry and hot, and the heat of the body is much greater than natural. ('Ann. d'Hyg.' 1867, 1, 423.) In one case, observed by Dr. Sieveking, the patient, a boy æt. 13, remained in a state of semi-consciousness for four days, and then had a cataleptic seizure. ('Lancet,' 1870, 2, 184.) Dr. Passauer has fully considered this subject in reference to armies in Horn's 'Vierteljahrsschrift,' 1867, 1, 185. The symptoms in cases of sunstroke have not been always accurately recorded. In one instance a medical man, who suffered from an attack while on a voyage in the tropics, was able to note and describe the symptoms from the commencement of the attack up to the eighth day, when he recovered. ('Lancet,' 1872, *1, 464; also 2, 128.)*

STARVATION.

A rare cause of death.—Death from the mere privation of food is a rare event, although, if we were to form an opinion from the verdicts of coroners' juries, its occurrence would not appear to be uncommon in this and other large cities. In one of the Annual Registration Returns it is stated that 130 persons died from starvation. Such cases must, however, be received with some distrust, as care is rarely taken to ascertain precisely how far bodily disease may have been concerned in causing death. Still it cannot be denied that starvation should be classed among the forms of violent death, being sometimes the result of criminal neglect or inattention in the treatment of children or of infirm and decrepid persons, and thus constituting homicide; or at other times, although rarely, arising from an obstinate determination to commit suicide in those from whom all other means of self-destruction are cut off.

Symptoms.—The symptoms which attend on protracted abstinence (*chronic starvation*) are thus described by Rostan and Orfila:—In the first instance pain is felt in the stomach, which is relieved by pressure. The countenance becomes pale and livid or cadaverous; the eyes are wild and glistening, the breath hot, the mouth dry and parched, the saliva thick and sparingly secreted. An intolerable thirst supervenes, which, in all cases of attempted suicide by starvation, or privation of food from accident, has formed the most prominent symptom. The body becomes slowly emaciated, the eyes and cheeks sink, and the prominences of the bones are perceptible: the feeling of pain may be so intense as to give rise to delirium. There is the most complete prostration of strength, which renders a person incapable of the least exertion. After a longer or shorter period the body exhales a fetid odour, the mucous membrane of the outlets becomes sometimes red and inflamed; and death may be preceded by a fit of delirium, or by convulsions ('Cours Elémentaire d'Hygiène,' vol. 1, pp. 283 *et seq.*; and Orfila, 'Médecine Légale,' vol. 1, p. 415). The symptoms of violent excitement described by these writers have been chiefly witnessed in the cases of shipwrecked mariners, and they may have been partly due to the peculiar effects of a tropical climate (Orfila, 'Méd. Lég.' vol. 1, p. 415), or to the drinking of wine, spirits, salt water, or even their own urine (Dr. Martyn, in 'Med. Times and Gazette,' March 30, 1861, p. 344). Referring to cases which occurred during the Irish famine of 1847, Dr. Donovan states that the persons who suffered from privation of food during the Irish famine described the pain of hunger as at first very acute, but after twenty-four hours had been passed without food the pain subsided and was succeeded by a feeling of weakness and sinking, experienced principally in the region of the stomach; accompanied with insatiable thirst, a strong desire for cold water, and a distressing feeling of coldness over the entire surface of the body. In a short time the face and limbs became frightfully emaciated; the eyes acquired a peculiarly wild stare; the skin exhaled an offensive smell, and was covered with a brownish filthy-looking coating, almost as indelible as varnish. This he was at first inclined to regard as encrusted filth, but further experience convinced him that it was a secretion poured out from the exhalants on the surface of the body. The sufferer tottered in walking, like a drunken man: his voice was weak, like that of a person affected with cholera; he whined like a child, and burst into tears on the slightest occasion. In respect to the mental faculties, their prostration kept pace with the general wreck of bodily power; in many there was a state of imbecility, in some almost complete idiocy; but in no instance was there delirium or mania, which has been described as a symptom of protracted abstinence among shipwrecked mariners. ('Dub. Med. Press,' February 1848, *p. 67.*)

In addition to the symptoms above described, there is in some cases severe pain in the region of the stomach, a suppression of the fæces, or, if discharged, they are in small quantity, dry, and dark-coloured; the urine is scanty, high-coloured, and turbid; the intellect is dull. The person may be exhausted, and remain without motion in one position, or be seized with a furious delirium, which may drive him to acts of violence. In the last stage the body is reduced to an extreme state of emaciation, and before death it evolves an offensive odour, like that of incipient putrefaction. The excretions have also a putrescent odour. The surface of the skin may be covered with spots (petechiæ), and the person finally dies, in some cases slightly convulsed. (Orfila, Op. cit. p. 415.) M. Chassat found, in his experiments on animals, that in some instances the animal died after having had successive attacks of convulsions. (Beck's 'Med. Jur.' vol. 2, p. 80.) In a case which fell under the notice of Dr. Sloan, a healthy man, æt. 65, was by an accident shut up in a coal-mine for twenty-three days without food. When found he was conscious, and he recognized and named his deliverers. He was so weak that he could scarcely raise his hand to his mouth, and so much emaciated as to excite the surprise of his fellow-workmen by the extreme lightness of his body. Under careful treatment he so far recovered as to give an account of his feelings. For the first two days, hunger was his most urgent symptom. This passed off, and he then began to suffer from severe thirst, which he allayed by drinking some foul water. After ten days he became so weak that he was unable to move from the spot where he had lain down. He slept but little, and not soundly—never entirely losing the consciousness of his situation. His bowels acted only once, but he passed urine freely. The matter brought from his bowels by injections was dark-coloured, like meconium, and very fetid. He died on the third day after his removal, in spite of every effort to save him, and on the day of his death he was in the following state:—his features were sharp and pale, his eyes sunk; the skin of the abdomen seemed to touch the backbone, which could be distinctly felt through it; his body presented more emaciation than Dr. Sloan had ever seen produced by disease; he had altogether a dried appearance, very much like that of natural mummies found in catacombs; his pulse was gone; his voice was in a whisper, like the *vox cholerica*; there was uneasiness, increased by pressure in the region of the stomach; his intellect was sound, and remained so until death. ('Med. Gaz.' vol. 17, p. 265.)

This case confirms the observation of Dr. Donovan, that delirium is not a necessary attendant on protracted abstinence, and it proves incontestably that a person may die from the effects of abstinence or starvation, in spite of the best-directed efforts for his recovery. Mr. Thornhill reports, in the same journal, the cases of eight men and a boy who were shut up in a coal-mine for eight days without food ('Med. Gaz.' vol. 17, p. 390); but the symptoms here noted were rather those of hunger than of long abstinence. They all suffered from excessive thirst; they were all troubled with ocular illusions, showing cerebral excitement. The occurrence of ocular spectra, and other symptoms indicative of a depressed state of the nervous system, has also been noticed by Casper. ('Handbuch der Ger. Med.' 1857, 1, 374.) According to Dr. Martin, the emaciation in starvation is characteristic; it is a withering or shrivelling-up of the skin, which has lost its elasticity, giving to youth the aspect of age. Death, when not hastened by disease, is slow and imperceptible, or it is precipitated by syncope from sudden effort, or by exposure to severe cold. Delirium is not, according to him, a symptom of starvation. ('Med. Times and Gaz.' March 30, 1861, p. 344.)

The period which it requires for an individual to perish from hunger is subject to variation; it will depend materially upon the fact whether a person has had it

in his power or not to take at intervals a portion of liquid, to relieve the overpowering thirst which is commonly experienced. The smallest portion of liquid, thus taken occasionally, is found to be capable of prolonging life. It is probable that in a healthy person, under perfect abstinence, death would not commonly take place in a shorter period than a week or ten days. This opinion appears to derive support from the results of those cases in which there has been abstinence owing to disease in the throat and difficulty of swallowing food. Age, sex, state of health, and the effects of exposure to cold, may accelerate or retard a fatal termination.

Appearances after death.—There are but few details of the appearances presented by the bodies of those who have died of starvation, and the cases themselves are too rare to enable us to decide with certainty upon the accuracy of the reports which have hitherto appeared on the subject. The body is shrunk and emaciated, and remarkable for its lightness. The skin is dry, shrivelled, and free from fat. The muscles are soft, deprived of fat, and much reduced in size. The stomach and intestines are usually found collapsed, contracted, and empty—the mucous membrane being thinned and sometimes ulcerated. The liver, lungs, heart, kidneys, and the great vessels connected with these organs, are collapsed and destitute of blood; the heart and kidneys free from any surrounding fat—the gall-bladder distended with bile—the omentum shrunk and destitute of fat. In Dr. Sloan's case (*suprà*) the body was observed to be extremely emaciated: the intestines were collapsed, the stomach was distended with air, and slightly reddened at its greater extremity. The omentum had almost disappeared; it was entirely destitute of fat. The liver was small, and the gall-bladder distended with bile. The other viscera were in their normal state. ('Med. Gaz.' vol. 17, p. 389.) Mr. Tomkins, of Yeovil, inspected the body of a man who died from starvation in February 1838. The face was much shrunk and emaciated; the eyes were open, and presented a fiery red appearance, as intense as in a case of acute ophthalmia during life. This red appearance has been met with by Dr. Donovan in death from exposure to cold. ('Dublin Med. Press,' Feb. 2, 1848, p. 66.) The skin was tough, and there was scarcely any cellular membrane to be seen. The tongue, lips, and throat were dry and rough. A peculiar odour was exhaled from the body. The lungs were shrunk and contracted; the investing membrane was slightly inflamed. The stomach and intestines were empty, but quite healthy; the gall-bladder was nearly full of bile, and the surrounding parts were much tinged by this liquid. The urinary bladder was empty and contracted. ('Lancet,' March 1838.)

In some cases inspected during the Irish famine, Dr. Donovan states that the appearances which he witnessed were extreme emaciation, total absorption of the fatty matter on the surface of the body, total disappearance of the omentum, and a peculiarly thin condition of the small intestines, which in such cases were so transparent, that if the deceased had taken any food immediately before death, the contents could be seen through the coats of the bowel: on one occasion (at an inquest) he was able to recognize a portion of raw green cabbage in the duodenum of a man who had died of starvation. This thin condition of the coats of the intestines he looks upon as the strongest proof of starvation. The gall-bladder was usually full, and the parts in the vicinity of it were much tinged by the cadaveric exudation of bile; the urinary bladder was generally contracted and empty, and the heart pale, soft, and flabby; there was no abnormal appearance in the brain or lungs. Dr. Martin assigns as a condition of the intestines diagnostic of starvation, that they are not only contracted but shrunken and diminished in size, shortened in length as well as in calibre, and like a mere cord, as if the canal was obliterated. ('Med. Times and Gazette,' *March 30, 1861.)* He met with this state in three cases:

once in starvation from want of food, and twice from total obstruction to its ingestion. Mr. Fletcher found the following appearances in the cases of two children, named *Aspinall*, who died from starvation—the elder aged one year and ten months, the younger four months. In the body of the elder there was extreme emaciation, without the slightest trace of disease in any of the viscera. Some dirty creamy fluid and four cherry-stones were found in the small intestines, but no distinctly fæcal matter, a few grains of which, however, were found in the large intestines: scarcely a trace of fat was visible. In the infant the same appearances were presented, although the emaciation had not proceeded to the same extent. The evidence produced on the trial proved that the mother spent in drink the money given to her for household expenses, and that the children's food and clothing were neglected. The prisoners were tried for wilful murder, in accordance with the verdict of the coroner's jury. The judge ruled that the wife was in law the husband's servant, and if it were proved that he had supplied her with sufficient money, he must be acquitted; if he had not, the wife must be acquitted. The jury acquitted the man and brought in a verdict of manslaughter against the woman, who was sentenced to two years' imprisonment. ('Proceedings of Liverpool Medical Society,' 1855–56.) In some of these alleged deaths by starvation, ulceration of the bowels is met with. This has been considered to arise from want of food; but Dr. Donovan did not meet with it in those who died of lingering starvation. ('Dublin Med. Press,' Feb. 2, 1848, p. 66.)

These appearances, in order to throw any light upon the cause of death, should be accompanied by an otherwise healthy state of the body; since, as is well known, they may be produced by many organic diseases, and death may be thus due to disease, and not to the mere privation of food. It will not be always easy to say whether the emaciation depends on disease or want of food, unless we are put in possession of a complete history of the case. On this account, in all charges of homicidal starvation, the defence generally turns upon the coexistence of disease in the body, and the sufficiency of this to account for death. (See, in reference to medical evidence on this subject, the case of *Reg.* v. *Pryke*, Chelmsford Summer Assizes, 1840.)

The difficulties connected with medical evidence of death from starvation were well illustrated in *Reg.* v. *Mitchell* (Oxford Lent Assizes, 1861). The accused, a naval surgeon, was charged with the manslaughter of his female servant, a woman æt. 24, by withholding from her sufficient food. The evidence entirely failed to support this charge, although there could be no doubt that deceased had died either from an insufficient supply of food, or from the fact that the food which she had taken, or had it in her power to take, was not adequate to support life. The medical facts of the case were communicated to me by one of the principal witnesses for the prosecution, who saw deceased for the first time on the 4th of January. He found the woman feeble, emaciated, and suffering from exhaustion: she complained of great weakness and giddiness. There was no natural disease to which these symptoms could be referred. In spite of her removal, and the use of stimulants, she died in five days (Jan. 9). On inspection there were no appearances to account for death from natural causes. The body was much emaciated, and so light that it only weighed fifty pounds; there was no fat. The intestines were thin, and transparent in parts; the stomach and small intestines were much contracted. There was an entire absence of fat from the omentum and mesentery: the gall-bladder was much distended with bile. The other organs of the body were healthy, and there was no disease in any part to account for the emaciation. Two medical gentlemen confirmed this evidence at the trial, and they all agreed that the appearances were consistent either with death *from starvation or insufficiency* of food, or with the non-assimilation of food.

It was suggested in defence that deceased might have died from chronic diarrhœa; but there was no proof that this had existed to a degree to account for her death, and during the last five days of her life, it was proved that she did not suffer from diarrhœa at all. The statement of the deceased went to show that food was not withheld from her, and the prisoner was properly acquitted. The cause of death is, however, a separate question from his alleged criminality. On this point there is no reason to doubt that the opinion given by the three medical witnesses was perfectly correct, and justified by the facts which they had observed. The symptoms and appearances, as well as the entire absence of any natural disease to account for them, lead to the conclusion that deceased could not have taken sufficient food to support life, or that that which she took was not properly assimilated; in either case the symptoms and appearances would be those of death from protracted abstinence or starvation. As she was of a scrofulous habit, and of weak constitution, and the weather at the time she was first seen had been remarkably cold, it is probable that these indirect causes aggravated in some degree the effects of insufficient nutriment. It was suggested that this could not have been a case of death from starvation, because, on the day before her death, the deceased became delirious; and delirium, it was alleged, is not a symptom of starvation. This may be true of some cases; but the occurrence of delirium in this instance was not sufficient to set aside the strong evidence furnished by the symptoms and the general condition of the body of deceased. Delirium may be the result of great bodily weakness, on whatever cause depending: it is probably more rare in cases of chronic diarrhœa than in those of protracted abstinence. Too much importance must not be attached to its presence or absence on these occasions, since experience shows that there are few cases of starvation accurately observed in which the symptoms have been strictly accordant: and it would be going too far to assert that the occurrence of delirium before death would justify a medical witness in asserting that death could not have been caused by starvation, when the condition of the body and the whole history of the case allowed of no other reasonable interpretation of the facts.

Voluntary starvation. Pretended fasting.—There are a few cases recorded in which persons have voluntarily abstained from food, liquid or solid, for the purpose of self-destruction. Suicide, as a result of perfect abstinence is, however, exceedingly rare: the person cannot resist the intolerable thirst, or the desire for food, when placed within his reach. As it requires a period of about eight or ten days for the destruction of life under these circumstances, *i.e.* in the *acute* form of starvation, the resolution to abstain can be rarely maintained, and for the purpose of self-destruction starvation would never be resorted to, except where all other means of destroying life were removed.

Pretended fasting has been a subject of imposture at various times. The case of *Ann Moore*, of Tetbury, is noticed by most medical jurists, as showing how easily the public, even the educated public, may be deceived, and how lucrative such an imposition, when it has once taken hold of the public mind, may become. According to her account, she began to abstain from food in March 1807, and continued fasting for *six years*. It was then discovered, by close watching, that her daughter secretly gave her food and drink. It is stated, however, that during the last watch, she had no food of any kind for a period of nine days and nine nights. (Beck's 'Med. Jur.' 1, 58.) An imposture of this kind can only be detected by the most minute observation. The case of *Sarah Jacobs*, the *Welsh Fasting Girl* (December 1869), shows that a watch too strictly kept may have the imposture revealed by the actual death of the person. This girl, æt. 13, is stated to have voluntarily abstained from any kind of food for a period of *two years*. She had kept her bed during that time—*lying in it decorated* as a bride, visited by hundreds of

persons—in fact, she was thus publicly exhibited by her parents as a girl of miraculous powers. Her lips were moistened with water once a fortnight, but, according to the parents, no food was taken. Four professional nurses from Guy's Hospital were set to watch the girl, and the result was, that after passing through the usual stages of actual starvation, she died on the ninth day! She refused to take food at any time, and voluntarily accepted a lingering death rather than reveal the imposture. Her parents and those around her allowed her to die! An inquest was held, and a post-mortem examination gave the following appearances: The body was plump and well-formed; the membranes of the brain were much injected, the brain itself was healthy and of proper consistency. There was a layer of fat from half an inch to an inch thick beneath the skin of the chest and abdomen. The contents of the chest were healthy. The stomach contained three teaspoonfuls of a semi-gelatinous substance of the consistency of syrup, having a slight acid reaction. The small intestines were empty, and presented no attenuation or thinning of the coats. In the colon and rectum there was half a pound of solid excrement in a hard state, which might have been there, according to the witness, a fortnight or longer. The liver was healthy and the gall-bladder was greatly distended with bile; the kidneys and spleen were healthy, and the urinary bladder was empty.

The medical evidence at the inquest was to the effect that the child had died from exhaustion as the result of starvation, and the jury returned a verdict of death from starvation as a result of the criminal neglect of the parents in not administering food. They were tried on a charge of manslaughter, at the Carmarthen Summer Assizes, 1870. (*Reg.* v. *Jacobs* and *wife.*) An attempt was made in the defence to refer death to shock, and not to the want of food. The medical facts relied upon in support of this theory were the presence of fat in the body, and the absence of any thinning of the coats of the intestines; but, as Dr. Fowler very properly pointed out ('Lancet,' 1870, 2, p. 150), these conditions are only likely to be met with after long or chronic fasting, where the person has survived many weeks on insufficient or innutritious food. In the case of this girl the only proved abstinence from food was during the last eight days of her life, and this period of time would not suffice for the entire removal of the fat and the thinning of the coats of the intestines. The prisoners were convicted of causing the death of their child by criminal negligence. The father was sentenced to twelve months' imprisonment, and the mother to six months'. ('Lancet,' 1872, 2, 132.)

In addressing the jury, Hannen, J., said: 'that although the unhappy victim herself might have been, and probably was a consenting party to the fraud, yet, parents were bound to supply the wants of their children of tender years: and if the prisoners—in order to avoid detection of the fraud which they had entered upon, had refused their daughter food, they were guilty of manslaughter. In this case, the food necessary to support life was not supplied for a period of seven or eight days. If they (the jury) came to the conclusion that the deceased died because during those eight days she had had no food, he presumed that they would also come to the conclusion that during the two preceding years she had been supplied with food.' This appeal to common sense should suffice to prevent a belief in any more 'fasting' impostures.

The desire of a section of the public to know whether a human being could live two years without food has thus been gratified at the cost of life! Any person acquainted with the rudiments of physiology would know that the application of the test of watching, if really efficient, could only end in death! A writer justly remarks, in reference to this case of lamentable credulity: 'It is not science, but superstition, even to inquire into the possibility of any *human being living* a conscious life without food. The very profession to do *so is either disease, fanaticism*, or imposture, and should be treated as such.'

Legal relations.—Starvation is commonly the result of *accident* or *homicide*; but this is a question purely for the decision of a jury—it can seldom be elucidated by medical evidence. The withholding of food from an infant forms a case of homicide by starvation, on which a medical opinion may be occasionally required. Mr. Baron Gurney held that the *mother*, and not the father, was bound to supply sustenance to an infant. The child in this case was ten weeks old, and the father was charged with wilful murder, on the ground that he had not supplied it with food. The grand jury ignored the bill, under the instructions of the judge, upon the ground above stated. (*Rex* v. *Davey*, Exeter Lent Assizes, 1835.) But it is probable that there were particular circumstances in the case which led to this decision. The facts may be of such a nature as to inculpate the father, by proving that he was accessory to the death of the child. But where the husband and wife were charged with the murder of an apprentice to the husband, by using him in a barbarous manner, and the opinion of the medical witness was that the boy had died from debility occasioned by the want of proper nourishment, it was held that the wife was entitled to be acquitted, as it was the duty of the *husband*, and not of the wife, to provide sufficient food and nourishment for an apprentice. (*Rex* v. *Squire*, Starkie, vol. 2, p. 947.) Starvation is rare as an act of homicide, but it must not be supposed that the law implies by this the absolute deprivation of food; for if that which is furnished to a person be insufficient in quantity, or of *improper quality*, and death be the consequence, malice being at the same time proved, then the offender equally subjects himself to a charge of murder. Many years since a woman of the name of *Brownrigg*, who was accustomed to take parish-apprentices, was tried and convicted of the murder of two children, who had died in consequence of the bad quality and small quantity of food furnished to them by the prisoner.

The *baby-farming* cases, which have within the last few years led to trials for murder at the Central Criminal Court (*Reg.* v. *Mary Hall* and *Margaret Waters*, July 1871), in one instance followed by conviction, have shown that murder by starvation has for some time been secretly carried on in this metropolis, and the lives of many infants have been thus destroyed. It was proved by medical evidence that the food supplied was improper and insufficient, and that the children were drugged with opiates. The evidence showed on the part of the accused, not merely culpable neglect, but a deliberate intention to destroy life.

OBSTETRIC JURISPRUDENCE.

PREGNANCY.

CHAPTER 60.

SIGNS OF PREGNANCY—SUPPRESSION OF THE MENSES—PROMINENCE OF THE ABDOMEN—CHANGES IN THE BREASTS—QUICKENING—SOUNDS OF THE FŒTAL HEART—CHANGES IN THE MOUTH AND NECK OF THE UTERUS—FEIGNED PREGNANCY—DE VENTRE INSPICIENDO—PLEA OF PREGNANCY IN BAR OF EXECUTION—THE JURY OF MATRONS—CONCEALMENT OF PREGNANCY—PREGNANCY IN THE DEAD—IMPREGNATION IN A STATE OF UNCONSCIOUSNESS.

THE subject of Pregnancy, in so far as the proofs of this condition in a *living* female are concerned, rarely demands the attention of a medical jurist. If we except the few instances in which a magistrate requires an opinion from a medical man respecting the pregnancy of a pauper female brought before him, there are only two cases in the *English* law in which pregnancy requires to be verified; and these so seldom present themselves, that the questions connected with the pregnant state, rather belong to the science than the practice of medical jurisprudence.

SIGNS OF PREGNANCY.

Suppression of the menses.—It is well known that in the greater number of healthy females, so soon as conception has taken place, this secretion is arrested. But there are certain abnormal conditions which must not be overlooked. There are cases recorded which show that women in whom the menses have never appeared, or have appeared and ceased, may become pregnant. This, however, is allowed by all accoucheurs to be rare; and when it occurs, which we may readily learn from the account of the woman, it will be necessary to search for other signs in order to determine the question of pregnancy. Irregularity as to the period at which the function takes place is common among women. This irregularity may depend either upon peculiarity of constitution, the age of the person, or upon disease, any of which causes it will not be difficult to recognize. Their continuance after conception may make a pregnancy appear short. A case is reported in which a woman was married in the summer of 1856, and the menses continued after as before marriage. In October 1857 they ceased for the first time, and in the following December the woman was delivered of a full-grown child. The abdomen was not much enlarged, and the woman thought that she was only two months pregnant. ('Med. Times and Gaz.' April 30, 1859.) It is well known that there are numerous disorders of the uterus under which, irrespective of pregnancy, the menses may *become suppressed.* The continuance of the menstrual discharge, when once *set up, is not a necessary* condition for impregnation. Dr. Murphy has re-

ported the case of a woman who for sixteen years went on bearing children, eight in number, without having had during that period, any appearance of the menses. The late Dr. Reid, who quotes this case, mentions five instances that fell within his own knowledge in which women became pregnant notwithstanding a long previous cessation of the discharge. ('Lancet,' September 10, 1853, p. 236.) This is confirmed by the observations of others. Dr. Young communicated several cases of a similar kind to the Obstetric Society of Edinburgh. ('Ed. Med. Jur.' July 1870.) The absence of the menses as a consequence of pregnancy is generally indicated by the good health which a woman enjoys: and although disease may coincide with pregnancy, yet a careful practitioner will be able to estimate from the symptoms, to which cause the suppression is really due. On the other hand, a discharge perfectly analogous to the menstrual sometimes manifests itself, not merely for several periods in a pregnant woman, but during the whole course of pregnancy. (Dr. Murphy's 'Obstetric Report,' 1844, p. 9; also Hencke's 'Zeitschrift der S. A.' 1844, p. 265.) Mr. Whitehead has collected seven well-marked instances of menstruation during pregnancy. ('On Abortion,' p. 218.) These facts show that we must be cautious in forming an opinion; and not assert that, because a discharge continues, pregnancy cannot possibly exist, or, because there is no discharge, a female must be pregnant. The retention of the menses within the uterus from any cause, may produce enlargement of the abdomen, and give rise to most of the symptoms of pregnancy.

Feigned menstruation.—The menses may be either suppressed or retained; but if there be any strong motive for the concealment of her condition, a woman may feign menstruation. Dr. Montgomery detected a case of this kind, by the examination of the areolæ of the breasts. The woman had stained her linen with blood in order to make it appear that the menses continued, but she subsequently admitted that this was an imposition. It has been stated that there are differences between menstrual and ordinary blood, but there are no certain chemical means of distinguishing them. (See vol. i. p. 538.)

Prominence of the abdomen.—A gradual and progressive enlargement of the abdomen is a well-marked character of pregnancy: the skin becomes stretched, and the navel almost obliterated. This enlargement in general begins to be obvious about the third month, although there are some women of peculiar structure in whom the enlargement may not become perceptible until the fifth or sixth month, or even later: still it may be detected on examination. In fact, this sign can never be absent in pregnancy, although it may not be so apparent in some women as it is in others. The objection which exists to it is, that numerous morbid causes may give rise to prominence of the abdomen. This is undoubtedly the fact, as we have occasion to witness in the various kinds of dropsy, or in suppressed and retained menses—diseases which, in several instances, have been mistaken for pregnancy by eminent practitioners. On the other hand, instances are not wanting in which, owing to the persistence of menstruation and the absence of quickening, the gravid uterus has been actually tapped by mistake for an ovarian tumour: the operation being speedily followed by the birth of a full-grown child! (Whitehead 'On Abortion,' p. 186;) but the history of a case will in general enable a practitioner to form an opinion. A case of suppressed menstruation, strongly simulating pregnancy, is reported by Dr. Rüttel. (Henke's 'Zeitschrift,' 1844, p. 240.) The enlargement may be owing to disease—1st, when it has been observed by a woman for a time longer than the whole period of gestation; 2ndly, when it has been accompanied by a generally diseased condition of the system; and 3rdly, when there is an absence of the other symptoms of pregnancy. The most embarrassing cases are unquestionably those in which abdominal *disease coexists with pregnancy*. In some of these time alone can

solve the question, and a medical jurist should give the benefit of a doubt to the side of chastity, mercy, and humanity. (On an important case in which an abdominal tumour was mistaken for pregnancy, see 'Lancet,' October 16, 1847, p. 408.) While the abdomen enlarges from pregnancy, the margins of the abdominal muscles become more clearly defined; the navel is less depressed, and gradually acquires the level of the surrounding skin. As pregnancy advances it becomes more prominent, and in the last month it assumes the character of a tumour, instead of a depression. (Whitehead, op. cit. p. 209.)

A change in the breasts.—These organs in a pregnant woman are full and prominent, and the areolæ around the nipples undergo changes of colour which Dr. Montgomery and others regard as highly characteristic of the pregnant state. A mere fulness or pain in the breasts, and even in some rare instances the secretion of milk, may arise from other causes than pregnancy. Severe uterine or ovarian irritation may cause the breasts to become painful and swollen. The fulness of the breasts from pregnancy is not commonly observable until about the second or third month. A more or less transparent fluid is secreted by the gland-tissue of the breast, and can be expressed from the nipples. This secretion of milk may occur in a non-pregnant female as a result of uterine or ovarian disease. These cases, however, are not very common; but after a woman has once secreted milk, the secretion is easily reproduced in the breasts by very slight causes, quite independently of pregnancy.

The *areola* is generally observed during pregnancy to become considerably darker in colour and larger in diameter. The skin of which the areola is formed is soft, moist, and slightly tumid. The little glandular follicles about it are prominent, and often bedewed with a secretion; the change of *colour* has been the most attended to. The areolæ are commonly well-marked from the second to the fourth month of pregnancy—the intensity of colour being the last condition of the areola to appear. The prominence of the glandular follicles does not always exist in pregnancy, and the areola may become large and dark-coloured from other causes: consequently these signs are only to be looked upon as corroborative. In females of dark complexion, the areolæ are naturally dark irrespective of pregnancy; and in some advanced cases these changes in the areolæ are entirely absent. ('Edin. Month. Jour.' 1848, p. 693.) Dr. Montgomery has described as a sign of pregnancy the existence of a *brown line* extending from the pubes to the navel, especially in females of dark complexion, and a dark-coloured but not raised areola of about a quarter of an inch in breadth around the navel; but this also may be produced by uterine or ovarian disease.

Quickening.—The signs above given are applicable to the early as well as to the late stages of utero-gestation; but that which we have here to consider is one which is rarely manifested until about the fourth or fifth month. Quickening is the name applied to peculiar sensations experienced by a woman about this stage of pregnancy. The symptoms are popularly ascribed to the first perception of the movements of the fœtus, which occur when the uterus begins to rise out of the pelvis; and to these movements, as well as probably to a change of position in the uterus, the sensation is perhaps really due. The movements of the fœtus are perceptible to the mother before they are made evident by an external examination. The term is derived from the old Saxon word 'quick,' signifying living; as, at the time when medical science was in its infancy, it was considered that the fœtus only received vitality when the mother experienced the sensation of its motion! On the occurrence of quickening there is generally a great disturbance of the system, indicated by syncope, nausea, and other distressing symptoms. After a short time the woman recovers; and if sickness has hitherto attended the pregnant state, it has been frequently observed to disappear when the period of quickening has passed.

No evidence but that of the woman herself can satisfactorily establish the fact of quickening, and this it is necessary to bear in mind; since, in some cases in which pregnancy is an object of medico-legal importance, proof of quickening may be demanded by law. Dr. Reid remarks ('Lancet,' September 10, 1853, p. 237), with respect to this sign, that few women can tell the exact day on which they first feel it; and a large proportion cannot place it within a range of fourteen days, which is of little assistance in the calculation of the probable date of delivery. Women who profess to be most exact in noting the period of quickening differ from each other as to the time. There is much self-deception as to this symptom. The discovery of the movements of a child by an examiner is really a proof that the usual period of quickening is past, but their non-discovery at the time of examination is no proof whatever that the woman has not quickened; since the movements are by no means constant, and may be accidentally suspended even at several successive examinations. Besides, cases every now and then occur in which well-formed healthy women do not experience the sensation of quickening during the whole course of pregnancy; and, what is of more importance, the movements of the child may be at no time perceptible to the examiner. The uncertainty of quickening as a sign of pregnancy is too well known to require more than adverting to. Women have been known to mistake other sensations for it, and in the end it has been proved that they were not pregnant. A woman may declare that she has felt quickening when she has not: and unless the movements of the child are perceived by the examiner at the time, how is he to confirm or disprove her statement? Quickening, then (so far as it concerns the statement of the woman), cannot be relied on as a proof of pregnancy; but if the movements of the child can be felt by the examiner through the abdomen, this is clear evidence not only of the woman being pregnant, but of her having passed the period of quickening.

We may next consider the *period* of pregnancy at which this symptom ordinarily occurs. Our law seems to infer that it is a constant, uniform, and well-marked distinction of the pregnant state, and in some instances it insists upon proof accordingly. Taking the general experience of accoucheurs, quickening happens from the tenth to the twenty-fifth week of pregnancy; but the greater number of instances occur between the *twelfth* and *sixteenth* week, or between the fourteenth and eighteenth week after the last menstruation. Dr. Ahlfeld gives as an average of 43 cases 132·7 days. The late Dr. Reid considered it to denote about the sixteenth, seventeenth, or eighteenth week of pregnancy. The date corresponds to the termination of the fourth calendar month. One of his patients did not feel this symptom until the seventh calendar month. ('Lancet,' September 10, 1853.) It is a popular opinion that quickening takes place exactly at the end of four calendar months and a half, but it mostly occurs two or three weeks earlier than this period. Many women estimate that they are four months advanced in pregnancy when they quicken, but this mode of calculation is open to numerous fallacies. Dr. Rodrigue knew a lady who invariably quickened at two months, and went full seven months after, with all her children—five in number. ('Amer. Jour. Med. Sci.' Oct. 1845, p. 339.)

From these observations, it will be seen that an examiner may sometimes detect the *movements of the child* about the third or fourth month, at others not until the fifth or sixth, and in other instances not at all throughout pregnancy. Even in those cases in which the movements of the child have indisputably existed, they are not always to be perceived; hence several examinations should be resorted to, before any opinion can be fairly expressed from their absence. The best mode of examining the abdomen for fœtal movements is to allow the hand to remain at rest on the abdomen. If the patient has quickened recently, the impulse is slight, and generally at only one

spot, which, however, is seldom the same. Should she have advanced further, then the movements will be more rolling, and the parts of the child be detected at the same time. In making these examinations a diagnosis may be facilitated by previously immersing the hand in cold water, and then suddenly applying it to the abdomen. When the movements of the child are distinctly perceived through the skin of the abdomen, they constitute a certain sign of pregnancy; but their non-discovery at a particular time is no proof that a woman is not pregnant. The jury of matrons probably trust entirely to this sign; hence their verdicts commonly turn out to be erroneous. There is another source of fallacy which may present itself when an artful woman is desirous of making it appear that she is pregnant—namely, that she may simulate the movements of a child by a peculiar action of the abdominal muscles. Medical practitioners of repute have been deceived for a time by this artifice, but this occurred before the discovery of chloroform or the stethoscope.

Sounds of the fœtal heart.—Another sign is that which is derived from *auscultation.* By the application of the ear or a stethoscope to the abdomen, at or about the fifth month of pregnancy (rarely earlier), the pulsations of the fœtal heart may be recognized and counted. These pulsations are not synchronous with those in the arteries of the mother; they are much more rapid, and thus it is impossible to mistake them. Their frequency, according to Dr. Hope, is in an inverse ratio to the stage of gestation, being 160 at the fifth and 120 at the ninth month. Sometimes, however, the fœtal pulse may descend to 80 or even 60 beats per minute. This sign, when present (like the fœtal movements), not only establishes the fact of pregnancy beyond all dispute, but shows that the child is living. The sound of the fœtal heart is, however, not always perceptible: when the child is dead, of course it will not be met with; but its absence is no proof of the death of the child. because the hearing of the pulsations by an examiner will depend very much upon the position of the child's body, the quantity of liquor amnii, the presence of disease, and other circumstances. Thus the sounds may be distinctly heard at one time, and not at another; they may be absent for a week or fortnight, and then will reappear: so that although their presence affords the strongest affirmative evidence, their absence furnishes uncertain negative evidence; and several examinations should be made in the latter case, before an opinion is formed. The earliest time at which the pulsations may be heard has been stated to be about the fourth month, but they will be best heard after the sixth month. The reason why the sounds of the fœtal heart are not always perceived, is owing not only to changes in the position of the child, but to the vibrations having to traverse the liquor amnii and the soft layers of the skin of the abdomen. The presence of much fat in these layers intercepts them. The point where the sounds can be most readily perceived is in the centre of a line drawn from the navel to the anterior inferior spinous process of the ilium on either side—perhaps most commonly on the right. When clearly detected they furnish an unequivocal sign of the pregnant state. Besides the sounds of the fœtal heart, there are other sounds to which the name of 'placental murmur' or *uterine sounds* has been given. These are heard from an earlier date, *i.e.* at any time after the third month. As they may occur in connection with fibroid tumours of the uterus, they do not necessarily indicate pregnancy. (See a paper on this subject by Dr. Druitt, 'Med. Times and Gaz.' Jan. 21, 1860; also another by Dr. Copeman, of Norwich, 'Obstet. Trans.' 1869, 10, 62.)

Kiestein in the urine.—A substance called *Kiestein*, or *Gravidine*, has been found in the urine of pregnant women. It appears as an amorphous iridescent pellicle on the surface of the urine about twenty-four hours after it has been

voided. This is no longer regarded as a satisfactory indication of pregnancy, and no reliance is placed on it.

In reference to the above signs it may be observed, that if the motions of the child or sounds of the heart be perceptible, no other evidence of pregnancy need be sought for. The mere suppression of the menses, prominence of the abdomen, and fulness of the breasts, cannot alone establish the fact; but unless the morbid causes of these abnormal states of the system be clearly and satisfactorily obvious to the examiner, it is a fair presumption that the woman in whom they are observed, is probably pregnant. In any case in which a doubt exists we should require further time to form a correct opinion.

Changes in the mouth and neck of the uterus.—The signs hitherto mentioned are chiefly relied on in medical practice; but it must be remembered that no case can possibly occur in civil or criminal jurisprudence in which it will not be in the power of a medical witness to make an examination of the woman. He may then form a safe judgment from the changes which take place in the neck of the uterus, and from the sensation imparted to the finger by the presence of a rounded body (like the fœtus) floating in a liquid, when an impulse is given to the uterus from below. Up to the fifth or sixth month of pregnancy, the neck of the uterus may be commonly felt projecting into the vagina; it is of its usual length, hard and firm. After that period, the uterus rises into the pelvis, and the neck is spread out, shorter and softer, the aperture increasing in size and becoming rounder. Towards the end of gestation the neck of the uterus appears to be lost, becoming like a thin membrane, and sometimes no aperture can be felt.

Alternate relaxation and contraction of the uterus.—This is a very important symptom, when present. It is seldom that five or ten minutes elapse without its being perceptible to the hand resting on the abdomen. At one time a tumour is plainly defined, more or less firm, and resisting; in a short time this becomes flabby, and sometimes not to be found: again the uterus contracts, and the tumour becomes as apparent as before. This is a condition not to be found in any other than a uterus distended by the results of a conception, if we except a rare case mentioned by Dr. Tanner (see 'Signs and Diseases of Pregnancy,' p. 118). But as similar cases would be attended by hæmorrhage, this would help us to distinguish them from the pregnant uterus. The above phenomenon is constant and commences at an early date. (See Dr. J. Braxton Hicks' letters to Dr. Hughes Bennett, in 'Lancet,' 1863.) Probably it is to be felt as soon as the uterus is capable of recognition above the brim of the pelvis. It will be noted that the fœtus can be more clearly distinguished during the uterine relaxation.

A well-marked test of pregnancy is the motion perceptible to the finger on giving a sudden impulse to the child through the neck of the uterus. Capuron calls this the touchstone in the distinction of the pregnant state: without it, he considers a medical jurist may be easily deceived. To this passive motion of a child, the name of *ballottement* is given. It cannot be easily determined before the fifth or sixth month; but after the latter period, especially as pregnancy becomes advanced, it is always available. In the French schools, the method of applying the *toucher* and *ballottement* to pregnant females is systematically taught, and by a little practice it may be easily acquired. This motion to the child can also be given through the abdomen, by external *ballottement*, in two ways: either by the patient lying on her side, the hand placed on the most depending part of the uterus, or by placing the patient on her elbows and knees: the uterus will then fall forwards, the child also will fall in contact with the front wall of the uterus, and its presence thus be made more perceptible. This latter mode is best adapted for the early stages of pregnancy.

If we find, with amenorrhœa or suppressed menses, a tumour distended to the size to be expected from the duration of that amenorrhœa—if the tumour be more or less central, alternately relaxing and contracting, containing an irregularly-shaped body, which is freely moved within, and also self-moving, we have here all the indications of a living fœtus: and if we add to these the fœtal heart-sounds, with the other minor symptoms, we have a condition which, if clearly made out, must be considered a complete proof of pregnancy. Of course we have certainty when the fœtal heart-sounds and movements are well-marked: the other symptoms may justify only a strong suspicion.

As most of these signs refer to an advanced stage, a witness may be asked, what are the unequivocal indications of pregnancy *before the fifth and sixth months?* The answer to this question is of little moment to a medical jurist, since he is rarely required to give an opinion under these circumstances. In all *legal* cases, when pregnancy is alleged or suspected, it is the practice for a judge or magistrate, on a representation being made by a medical witness, to postpone the decision one, two, or three months, according to the time required for obtaining *certain evidence.* The evidence will consist in plainly distinguishing—1. A rounded body floating freely in a tumour, which alternately relaxes and contracts; 2. The movements of a fœtus; and 3. The sounds of the fœtal heart. The most experienced men agree, that before the *sixth month*, the changes in the neck and mouth of the uterus are of themselves too uncertain to enable an examiner to form a safe opinion; and, *à fortiori*, it is impossible to trust to external signs alone. Mr. Whitehead dissents from this view, and considers that a specular examination of the mouth of the uterus is not only more satisfactory than any other mode of exploration, but that it will enable a person to determine with certainty the existence of pregnancy during its earlier stages—from a few days after conception to the middle or end of the fourth month, when auscultation first becomes available. In the *fourth week* the lips of the mouth of the uterus at the centre of their margins are permanently separated to the extent of one or two lines; and the os tincæ (the aperture) itself, which was before a mere chink with parallel boundaries, forms an elliptical or sometimes rounded aperture, which is occupied by a deposit of transparent gelatinous mucus. At *six* or *eight* weeks it is decidedly oval or irregularly circular, with a puckered or indented boundary having a relaxed and lobulated character. The whole circumference of the neck is enlarged, and the commissures or angles of the mouth are obliterated. The mouth continues of this irregular form throughout the whole period of gestation; but from the time of quickening to the end of the seventh month, the progressive changes are not so marked as to form a guide for determining the period of pregnancy. ('On Abortion,' p. 204.) This condition of the mouth of the uterus must not be confounded with its menstrual state in the early stages, nor with a diseased state in the latter stage of gestation.

Feigned pregnancy.—Pregnancy has been sometimes feigned or simulated for the purpose of extorting charity, of obtaining a settlement in a parish, or of compelling marriage; but it is scarcely necessary to observe that an impostor may be easily detected by a well-informed practitioner, since a woman always feigns an advanced stage of pregnancy. Although she may state that she has some of the symptoms depending upon pregnancy (and, unless she has already borne children, she will not be able to sustain a cross-examination even respecting these), yet it is not possible for her to simulate without detection a distension of the abdomen or the state of the breasts. If she submits to an examination, the imposition must be detected: if she refuses, the inference will be that she is an impostor. Women have been known to possess the power of giving apparent prominence to the abdomen, and even of simulating the movements of a child by the aid of the abdominal muscles. By placing

them under the influence of chloroform, the abdomen at once collapses, and the imposture is detected. These cases of spurious pregnancy are sometimes met with in hysteric females. (See case by Dr. Simpson, 'Edin. Month. Journ.' 1854, 9, 473. See also 'Lancet,' April 14, 1555, p. 381; April 28, 1855, p. 429; and May 26, 1855, p. 533.) Pregnancy may be feigned by a woman in order to avoid being sent by a magistrate's order to a distant parish, or to escape the punishment of hard labour, to which she may have been sentenced. If in the latter case the slightest doubt should exist whether the woman is really pregnant or not, an affirmative opinion should be given, at least for a time, since great and even irreparable mischief might result by taking an opposite course.

In civil cases of feigned pregnancy, an examination should always be insisted on, or the reputation of a medical man may suffer by his forming a hasty conclusion on the subject from insufficient data. In this respect the case of *Devonald* v. *Hope* (Q. B., December 1838) is of some interest. A medical man having given an opinion that a female patient was pregnant, subsequently brought an action against her for medical attendance. It turned out, however, that she was not pregnant, and that there were no satisfactory medical grounds upon which his opinion was based. The plaintiff complained of having been deceived by the defendant as to her condition; but it is obviously in the power of every medical man to prevent such a deception being practised on him. An external examination only will not suffice either to affirm or negative the allegation of pregnancy, except when it is stated to be far advanced. For a singular case in which, on a charge of assault, evidence of this kind was tendered, see 'Med. Gaz.' vol. 36, pp. 1083, 1169. (On the fallacy of the signs of pregnancy, and the simulation of this state, see a paper by M. Tardieu, 'Ann d'Hyg.' 1845, 2, 429; also 1846, 1, 83.)

De ventre inspiciendo.—One of the cases in English law, in which pregnancy requires to be verified, is of a civil nature. It is in relation to the Chancery writ '*de ventre inspiciendo.*' A woman may assert that she is pregnant at the time of her husband's death, and the heir-at-law may sue out a writ to require some proof of her alleged pregnancy, as his right to the estate of which the husband died possessed, may be materially affected by the result. Until within a recent period the decision of the question of pregnancy was left to twelve matrons and twelve respectable men, according to the strict terms of the ancient writ; but in some late cases it has been considered advisable to depart from this absurd custom, and to place the decision in the hands of skilled medical practitioners or obstetric experts.

In May 1835 a gentleman named *Fox* died, leaving a widow, to whom he had not been married more than six weeks. By his will, made some months before his death, he left the great bulk of his property to the use of Ann Bakewell, spinster, for the term of her natural life, so long as she remained sole and unmarried; and after her decease or marriage, to one John Marston. Soon after the making of the will this Ann Bakewell became the wife, and subsequently the widow, of Mr. Fox. Notwithstanding that she had married the testator himself, the plaintiff Marston claimed the property of the widow, on the ground of her having infringed the terms of the will by her marriage with the testator! She pleaded pregnancy, and in August 1835 the writ '*de ventre inspiciendo*' was sued out of Chancery by Marston. Some discussion took place in Court on the question whether the writ should be issued in its original indelicate form or not: *i.e.* whether the female should undergo examination by the sheriff, assisted by twelve matrons and twelve respectable men! The widow petitioned the Court not to issue the writ, and put in an affidavit from her ordinary medical attendant, to the effect that she was pregnant, and too weak to undergo the proposed examination. Ultimately it was

decided that two matrons, with a medical man on each side, should visit Mrs. Fox once a fortnight until her delivery. There was no doubt of her pregnancy, and she was delivered at the due time, to the great disappointment of the residuary legatee. (See 'Med. Gaz.' vol. 16, p. 697; vol. 17, p. 191.) The nature of this judicial examination will be understood by quoting the terms of the writ addressed to the sheriff; 'In propriâ personâ tuâ accedas ad præfatam R et eam coram præfatis videri et diligenter examinari et tractari facias per ubera et ventrem omnibus modis quibus melius certiorari poteris utrum impregnata sit necne.' (*Register Brevium.*) There can of course be no difficulty in forming an opinion in such a case, provided the pregnancy is at all advanced. It is, however, not a little singular that in the present day any attempt should be made to apply the feudal customs of a rude and barbarous age to the determination of questions which belong exclusively to an advanced state of medical science.

Plea of pregnancy in bar of execution.—The second case in which pregnancy requires to be verified, in English law, is in relation to criminal jurisprudence. When a woman is capitally convicted, she may plead pregnancy in bar of execution. The judge will then direct a jury of twelve married women '*de circumstantibus*,' to be empannelled, and sworn to try, in the words of the law, 'whether the prisoner be with child, of a quick child or not.' If they find her quick with child, she is respited: otherwise the sentence will take effect. In admitting the humanity of the principle by which a pregnant woman is respited until after her delivery, there are two serious objections to the practice of the common law, whereby it is made to fall short of what, in a civilized country, society has a right to expect from it: these are—1st, that the question of pregnancy is allowed to be determined by a jury of ignorant women accidentally present in Court; and 2ndly, that the respite is made to depend, not upon proof of pregnancy, but upon the fact of a woman having quickened! This sign of the pregnant state has been known to occur so early as the third, and so late as the sixth month; some women have even reached the seventh month without observing it; hence, the infliction of capital punishment under these circumstances would be a matter of accident (*ante*, p. 149). Quickening is a sign not easily established, except by extorting a confession from the female, as by making her give evidence against herself; and this is the only possible way in which, in a doubtful case, the question could be determined by a jury of matrons. They commonly trust to feeling externally the movements of a fœtus, but this is at all times a purely accidental circumstance, and they may not be perceptible at the time of the examination. It must be obvious, on the least reflection, that the means resorted to by the English law to determine such a question are bad, and are quite unfitted for the present state of society. Several modern cases show that a jury of matrons may be easily deceived with respect to this sign of pregnancy. In *Rex* v. *Wright* (Norwich Lent Assizes, 1832) the prisoner was found guilty of the murder of her husband by poison. She pleaded pregnancy in bar of execution. The judge empannelled a jury of matrons; and they, after a form of examination had been gone through, brought in a verdict of '*not quick* with child.' The woman would have been executed had not several medical practitioners of Norwich represented to the judge that the method taken to determine pregnancy and quickening was so unsatisfactory that no reliance could be placed upon it. The prisoner was then examined by some medical men, and was found to have passed the usual period of quickening! The judge respited the prisoner, and the correctness of the medical opinion was confirmed by the woman being delivered, within four months afterwards, of a healthy full-grown child. (See 'Med. Gaz.' vol. 12, p. 22.) In a case tried in March 1838, a woman was convicted of murder, and pleaded pregnancy. A *medical* opinion was here required. The pregnancy, if it existed,

had so little advanced that the practitioner was unable to give a satisfactory report: and the judge respited the prisoner for a month, in order that the witness might have full opportunity to ascertain the fact. Still the jury of matrons is occasionally resorted to. Thus in the case of *Reg.* v. *Westwood* (Stafford Winter Assizes, 1843), the matrons were summoned to examine a woman capitally convicted, and they negatived the plea! It is not a little remarkable that, although in so many cases the matrons have given a wrong verdict, and that in no instance can they give a right one except as a matter of pure conjecture, this antiquated practice still continues. It was revived at the Central Criminal Court in 1847. (*Reg.* v. *Hunt*, September 1847.) This woman was convicted of murder: she pleaded pregnancy, and the matrons were empannelled and directed to use 'their best skill' to determine whether the prisoner 'was big with a quick child or not.' It was left to their option to have the assistance of a surgeon. In half an hour they returned a verdict 'that she had not a living child within her.' The law was directed to take its course; and the woman would have been executed but for the interference of the Secretary of State. He directed that the prisoner should be examined by competent medical men, who ascertained that she was really pregnant, and had actually passed that stage at which quickening is most commonly perceived. She was therefore respited, and the error in the verdict of the matrons was clearly proved by the birth of a child on the 28th December!

The case of *Christiana Edmunds*, a single woman, convicted of murder by poisoning at the Central Criminal Court in 1871, furnishes another recent instance of the application of the ancient custom. The plea was here raised apparently for the sake of obtaining a temporary respite. The jury of women *de circumstantibus* were taken as usual from the body of the Court, but they could come to no conclusion without the aid of a medical man. This was allowed by Martin, B., and the result was that the plea was negatived. A similar course was taken in the case of *Rachel Busby*, Durham Summer Assizes, 1871. But if a female jury so selected cannot act without medical aid, the summoning of them is superfluous: the medical opinion should be taken *independently of them.* So long as a medical man is associated with the jury of matrons their verdict will be based on reasonable grounds.

The value of the opinion of a jury of matrons upon such matters, may be estimated from the following facts. The late Dr. Reid records the case of an expert midwife who, when examined in the celebrated Gardner Peerage cause, deposed 'that she had herself once gone ten months with child—that she was always right in her calculations—that she always fainted away at quickening, &c., so that she could never be deceived.' Some time after the trial she applied to Dr. Reid, convinced on such grounds that she was seven months pregnant; but, on examination, Dr. Reid found that there was no pregnancy at all!

There seems to be no uniform rule of practice in such cases. In *Reg.* v. *Featherstone* (Chester Autumn Assizes, 1854), prisoner was convicted of the murder of her child, and a plea of pregnancy was put in by her counsel. A jury of matrons, taken from women present in Court, was empannelled and sworn to try whether she was quick with child, &c. After an examination of the prisoner, the jury, by their forewoman, said:—'The prisoner is not quick with child—she is not in the family-way.' In *Reg.* v. *Weeks* (Exeter Lent Assizes, 1856) this plea was urged in stay of execution on a capital conviction for murder. A jury of matrons was sworn in the usual way to inquire into the fact, and 'two doctors' were sworn to examine the prisoner and give evidence before the jury of matrons. After a short time they found that the prisoner was pregnant, and sentence was respited until after delivery. In *Reg.* v. *Cox* (Durham Winter Assizes, 1862), before Mr. Justice Keating, this venerable institution was again appealed to in aid of the criminal law. A jury of

matrons pronounced the prisoner to be quick with child, and sentence of death was respited. When they find in the affirmative a mistake is of no importance.

It is unnecessary in the present day to discuss the question, whether, until the period of quickening, the child is or is not '*pars viscerum matris.*' The vulgar opinion is, that the fœtus only receives life when the woman quickens; but the law should not base its decisions in reference to capital punishment upon vulgar opinions. As ovum, embryo, or fœtus, the contents of the uterus are as much endowed with special and independent vitality in the earlier as in the later periods of gestation. It is, then, absurd to fix upon an accidental and uncertain symptom, occasionally felt by a pregnant woman, as the point at which clemency may be shown. The bare proof of *pregnancy*, as in the law of France (Art. 27 of the Penal Code), should be sufficient to authorize a suspension of the sentence. The doctrine of quickening has been abandoned in relation to the law of criminal abortion; and there is still greater reason for its immediate abolition in reference to pregnant females capitally convicted.

This change would, however, be attended with but little benefit if the decision of the question of pregnancy were still to remain in the hands of 'matrons.' The record of their mistakes sufficiently establishes the correctness of this view; for if they are unable to recognize the pregnant state at the fifth month, and if, as experts, they are liable to be deceived about their own condition, they cannot fail to be mistaken in their opinions at earlier periods in examining other women. It is, indeed, an extraordinary circumstance, that when married women advanced in pregnancy are themselves continually deceived, and are obliged to consult medical men respecting their condition, they should be specially selected by the law as the persons best qualified to pronounce an opinion upon the pregnancy of a woman, in a case involving the infliction of capital punishment. It would be considered inhuman to execute knowingly a pregnant woman, but the imputation of inhumanity is not the less deserved by a custom which virtually leaves the issue in the hands of ignorant and incompetent persons, who may be accidentally present at a criminal trial! The Americans are certainly in advance of us in their legislation on this subject. Thus, by the revised statutes of New York, when pregnancy is pleaded in bar of execution, it is enacted that the sheriff shall summon a jury of *six physicians*, and shall give notice to the district attorney, who shall have power to subpœna witnesses.

These are, I believe, the only two cases in which pregnancy has any direct relation to medical jurisprudence; and it is remarkable that, with respect to them, the law of England has expressly provided that they should be left to the decision of non-medical persons! The following conclusions may therefore be drawn:—1. That the cases in which the signs of pregnancy become a subject of *legal* inquiry in England are rare. 2. That there is no case, in English law, in which a medical man will not have an opportunity of performing an examination *per vaginam*. 3. That a medical opinion is never required by English law-authorities, until the pregnancy is so far advanced as to render its detection *certain*. Hence discussions concerning areolæ, the condition of the breasts, &c., are, in a practical point of view, unnecessary to a medical jurist. By these remarks I do not intend to undervalue the importance of an accurate knowledge of the signs of pregnancy to a medical practitioner. Cases which may never come before a Court of law will be referred to him, and the serious moral injury which he may inflict on an innocent woman by inaccuracy should make him scrupulously cautious in expressing an opinion. The case of *Lady Flora Hastings* furnishes a sad illustration of the effects of such a medical error. On this subject the reader may profitably consult a paper by Dr. Nelson. ('Lancet,' Nov. 22, 1851, p. 485.) On other occasions his own reputation may suffer by a mistake of this kind. A married lady in Scotland, who

had not had a child for a long period, thought that she had become pregnant, and consulted the chief physician in the place, a man of skill and experience (now deceased). He saw this lady several times, and had every opportunity of examining her condition. He gave a decided opinion that she was *not* pregnant. The lady, however, made her preparations, and one night, not long after the medical opinion had been formally given, the physician was sent for to aid in the delivery!

Concealment of pregnancy.—By the law of Scotland, if a woman conceals her pregnancy during the whole period thereof, and if the child of which she was pregnant be found dead, or is amissing, she is guilty of an offence, and is liable to prosecution. Evidence is sometimes given as to outward appearances indicative of pregnancy; but in the main, proof of a woman having been pregnant and that which is relied on for conviction, is clear and distinct evidence of the actual delivery of a child. This is generally furnished by medical witnesses. The Scotch law, by making the concealment of pregnancy, under the circumstances above mentioned, an offence, proceeds on the principle that every pregnant woman is bound to make preparations for the safe delivery of a child; and it is therefore assumed that if a child is born clandestinely, without preparation, and is found dead or is amissing, its death is owing to the want of such preparation.

Impregnation in a state of unconsciousness.—It was formerly a question whether a woman could become *pregnant* without her knowledge. This may undoubtedly happen, when intercourse has taken place during profound sleep (lethargy, vol. 1, p. 45), or when a woman has been thrown into this state by narcotic drugs or vapours. But it is difficult to admit that any woman should remain pregnant up to the time of her delivery, without being conscious of her condition, if the intercourse took place during the waking state. A woman endowed with ordinary intellect could not avoid *suspecting* her condition after the fourth or fifth month: and this alone would be sufficient to induce her to seek advice whereby the fact would become known to her. When a woman is impregnated in a lethargic state, it is unlikely that she should go beyond the sixth month without being fully aware of her pregnancy, and if her motives were innocent she would undoubtedly make some communication to her friends. Capuron mentions a case of this kind, in which the fact of pregnancy was first ascertained at the end of the fourth month, by the woman having complained to one of her sisters of a strange sensation which she experienced in the lower part of her abdomen. ('Méd. Lég. des Accouchemens,' p. 86.) In a case related by the late Mr. Skey, a young woman who had had intercourse knowingly was supposed not to have been aware of her pregnancy until the seventh month; but there is reason to believe that she was guilty of deception. ('Med. Gaz.' vol. 39, p. 212.) There are generally, in these cases, strong motives for falsehood; hence such stories require close investigation before they are allowed to influence the opinion of a practitioner. A case occurred in September 1857, in which a woman, æt. 22, described as modest and decorous in her behaviour, then advanced to the sixth month of pregnancy, asserted that she had not consciously had connection with anyone, although she specified a date at which she remembered she had lost her consciousness—at which date intercourse might have been had! On being questioned, she denied that she had had at any time any soreness or pain in her private parts. Although there may be unconscious intercourse and pregnancy, it is not probable that in the case of a virgin, there should be such intercourse without the production of pain, soreness, or laceration; and these symptoms, if not perceived at the time, should be felt subsequently and create a suspicion, if not an actual knowledge, of what had happened. This rendered the account which the woman gave wholly improbable.

The fact that she was able to fix a date for her unconsciousness, with an accuracy in accordance with her condition, was also a suspicious circumstance.

Unconscious pregnancy.—It is quite possible that women who are living in connubial intercourse may become pregnant without being conscious of it. Dr. Rüttel mentions the case of a woman, æt. 41, who had been married upwards of sixteen years, and who, while returning from a neighbouring village, was suddenly delivered of her first child, when she had only a few days before been complaining that she was not likely to have any children. The child was born living and mature. (Hencke, 'Zeitschrift der S. A.' 1844, 264.) Mr. Long met with a case in which a married woman, æt. 24, subject to irregular menstruation, consulted him for an attack of spasms. On his arrival, he found that she had suddenly given birth to a seven-months child. Neither her husband nor herself had the slightest idea that she was pregnant. She had noticed that she had become somewhat stout, and that her breasts were more full than natural. She attributed her condition to improved health, and the cessation of the menstrual discharge was set down to some accidental cause. ('Med. Times and Gazette,' June 13, 1857, 592. See also a case at full term by Dr. Tanner, 'Obstet. Trans.' vol. 4, p. 113.) I am indebted to a distinguished judge, the late Sir John Hope, for the following fact in reference to unconscious pregnancy:—A married lady, who had not had a child for a period of nineteen years, found herself, as she thought, getting unusually stout. She was moving about with her family to different places. At last her size alarmed her, and she thought she was suffering from dropsy; she consulted a physician, who informed her that she was in an advanced state of pregnancy. She treated this opinion with great contempt. In travelling with her daughter, they arrived at a miserable inn: on the night of their arrival, this lady was seized with the pains of labour, and was delivered of a child. She had made no preparation for the birth, and, up to the moment when she was seized with labour-pains, she had not, with all her former experience, the slightest idea that she was pregnant. (For other cases in which married women have had no consciousness of pregnancy, see 'Lancet,' June 16, 1860, 909, and June 30, 1860, 643.) Instances of this kind are important in reference to alleged unconscious delivery in the cases of women charged with infanticide. At the same time, many of the cases in which there are motives for pleading unconscious intercourse or pregnancy require close examination: they will frequently be found to be quite unworthy of belief.

Pregnancy in the dead.—There is no special case in law wherein the *fact of pregnancy* requires to be verified after the *death* of a woman; but an examination may be necessary in order to determine the identity of a body, or to rescue the reputation of a woman from a charge of unchastity. The discovery of an embryo or fœtus with its membranes in the uterus would of course at once solve the question, when the necessity for an examination occurred; and the practitioner will remember that, even supposing many years to have elapsed since interment, and the body to have been reduced to a skeleton, still if the fœtus had reached the period at which ossification takes place, traces of its bones will be found amidst the bones of the woman. In examining the body of a woman long after death, for the purpose of determining whether she was or was not pregnant at the time of death, it may be proper to bear in mind that the unimpregnated uterus undergoes decomposition much more slowly than other soft organs. In the case of a woman who had been missing for a period of nine months,—whose body was found in the soil of a privy, so decomposed that the bones separated from the soft parts,—the uterus was of a reddish colour, hard when felt, and its substance was firm when cut. The fact was of importance. It was alleged that the deceased was pregnant by a young man, and that in order to conceal her condition he had

murdered her. From the state of the uterus, Casper was able to affirm that this organ was in its virgin condition, and that the deceased was not pregnant at the time of her death. On this representation the accused was liberated. ('Ger. Leich.-Oeffn.' vol. 1, p. 93.) In examining bodies many months after interment, and in one case upwards of a year, I have been surprised to find, that while other soft organs were decomposed, the uterus had scarcely undergone any change: its substance was still firm and hard. It may happen that the appearances in the uterus are sufficient to create a strong suspicion that the woman had been pregnant, but the ovum, embryo, or fœtus may have been expelled: in this case several medico-legal questions will arise in reference to delivery.

DELIVERY.

CHAPTER 61.

DELIVERY IN THE LIVING—CONCEALED DELIVERY—ABORTION IN THE EARLY STAGES OF PREGNANCY—THE SIGNS SPEEDILY DISAPPEAR—SIGNS OF RECENT DELIVERY IN ADVANCED PREGNANCY—SIGNS OF DELIVERY AT A REMOTE PERIOD—FEIGNED DELIVERY—DELIVERY IN A STATE OF UNCONSCIOUSNESS—CIRCUMSTANCES UNDER WHICH THIS MAY OCCUR—ADMISSION OF THE PLEA IN CASES OF ALLEGED CHILD-MURDER—SIGNS OF DELIVERY IN THE DEAD—TRUE AND FALSE CORPORA LUTEA—FALLACIES TO WHICH THEY GIVE RISE—CHARACTERS OF THE OVUM OR EMBRYO FROM THE FIRST TO THE SIXTH MONTH.

DELIVERY is a subject which much more frequently requires medico-legal intervention than pregnancy. It will be sufficient to state that the concealment of birth, the crimes of abortion and infanticide, with questions relative to supposititious children, are closely dependent on the proof of parturition. This subject will admit of being considered under two heads:—1. As it relates to delivery in the *living*;—2. As it relates to delivery in the *dead*. In undertaking the investigation, we ought, if possible, to ascertain, either from the woman herself or from those around her, whether there was reason to suspect that she had been pregnant. If we can acquire any knowledge on this point it will materially facilitate our inquiry; but this is not always possible. It has generally happened, that previous pregnancy has been so concealed that few who saw the woman suspected her condition: then again, as the admission of her delivery may be the strongest proof of her criminality, she will perhaps resolutely deny it; and a medical practitioner has no right to extort this admission from her. From this it will be seen that a medical witness must often be prepared to prove the fact of delivery, against a woman who is criminally charged.

Delivery in the living. Concealed delivery.—The signs of delivery in a *living* woman vary materially according to the time at which this event has taken place. In common language, if the contents of the uterus are expelled before the sixth month, the woman is said to miscarry, or to have an abortion: if after the sixth month, she is said to have a premature labour. The law does not admit any such distinction: the expulsion of the ovum, fœtus, or child by criminal violence, at any period of utero-gestation, is regarded as a miscarriage or abortion. It will therefore be proper, in treating this subject, to commence with the earliest period at which the contents of the uterus may be expelled, and to make no artificial distinction between the signs of abortion and deli-

very. It has been well observed, that the signs of delivery are indistinct in proportion to the immaturity of the ovum. Thus, when it takes place at the second or third month, there are scarcely any proofs which can be derived from an examination of the woman. All the ordinary signs of delivery at the full period will be absent,—the development of the embryo not having been sufficient to cause any prominence in the abdomen, or to give rise to those changes in the system which take place previously to the birth of a mature child: *e.g.* enlargement of the breasts and dilatation of the mouth of the uterus. Abortion at this period (the second or third month) is generally accompanied by loss of blood, which may manifest itself by its effects on the body. This, however, can only give rise to a suspicion. At a later period of gestation there may be a discharge resembling the lochia, and the mouth of the uterus may be found enlarged and soft; but from the small size of the fœtus the outlet will present no positive evidence of delivery. The quantity of blood lost may be greater, and may have a more decided effect on the system. Of course, if the ovum, fœtus, or any of its membranes be found, then the presumption of abortion will be strongly supported: but women who designedly conceal their condition will commonly take effectual means to prevent the examiner from obtaining evidence of this kind.

These remarks relative to the state of the woman apply to an examination made *recently* after abortion. If any delay has taken place (and this is a common occurrence), even the ambiguous signs which have been mentioned will speedily disappear; so that after a period, which is short in proportion to the earliness of the expulsion, no traces whatever will be discovered. Dr. Montgomery met with a case in which abortion took place, with a considerable loss of blood, at the close of the second month. Twenty-four hours afterwards, the mouth and neck of the uterus were almost completely restored to their natural state. The vagina and external parts were hardly if at all dilated, and very little relaxed; the breasts exhibited imperfectly the appearances which accompany pregnancy, the ordinary sympathetic symptoms of which had been almost entirely absent. ('Cyc. Pr. Med.' 504; also Devergie, vol. 1, p. 683.) In such a case as this,—and for such cases a medical jurist must be prepared,—scarcely a presumption could have been entertained of the fact of delivery. After twenty-four or thirty-six hours, in the greater number of these early cases, we may expect to find, from a personal examination of the woman, no proofs whatever of abortion.

In order to determine the signs of a 'miscarriage,' as it is termed by our law, at an advanced period of gestation, it will be necessary to describe those which are considered to be characteristic of delivery at the full period. In these cases there will be only a difference in degree; the signs being more numerous and more clearly marked in proportion to the lateness of the period at which the contents of the uterus are expelled. The signs of delivery may be enumerated in the following order:—

Signs of recent delivery in the living.—The woman is weak, the countenance pale, the eyes are surrounded by livid areolæ, and there is an appearance of general indisposition. Any severe illness may, however, give rise to similar symptoms. Their sudden occurrence, from a state of previously good health, especially when pregnancy is known or suspected, will create a strong suspicion. The *breasts* are full, especially about the third or fourth day; the nipples are enlarged, and the areolæ around them present all the characters of advanced pregnancy. If the appearances described are not well marked at the first examination, they may be seen at a later period; and in a doubtful case, when the embryo or fœtus is not forthcoming, a second examination should be made before a final opinion is given.

1. The skin of the abdomen is relaxed, sometimes thrown into folds: the *cuticle interrupted by light-coloured* broken streaks, passing especially from

the groin and pubes towards the navel, which is more or less stretched and altered in appearance. Any disease which has caused enlargement of the abdomen may give rise to a similar appearance in the skin, so that when taken alone much confidence cannot be placed in these lines or streaks as proofs of delivery. The round form of the enlarged and semi-contracted uterus may be felt at the lower part of the abdomen, generally lying towards one or the other side. The apparent size of this organ will depend upon the degree to which it has contracted, and therefore greatly upon the time at which an examination is made. Dr. Montgomery has pointed out the existence of a dark line extending from the pubes to the navel, with a dark areola around the latter, in cases of recent delivery; but he has found this line to exist independently of pregnancy and delivery—in one case in a girl aged 10, and in another instance in a lady labouring under an ovarian tumour.

2. The *organs of generation* will be found externally swollen, contused, or even lacerated, with clots of blood about them. The outlet is much dilated; the mouth of the uterus is considerably open, and its margin considerably relaxed. The body of this organ will be found from two to four times the size of the unimpregnated state. It occasionally happens that the neck of the uterus is lacerated on one side during the passage of the head in primiparæ; should this be found, or a cicatrix, it will assist in proving delivery.

3. *The presence of the lochia* (λοχὸς, *child-birth*).—This is a discharge from the vagina, at first of a sero-sanguineous liquid, but it afterwards appears as a brown or green-coloured serum. It commences soon after delivery, and continues from a week to a fortnight, or even longer: it may be absent after the third day. This discharge has so peculiar an *odour* that some have regarded this alone as furnishing strong evidence of recent delivery.

The signs which have been enumerated are found only when no delay has taken place in making the examination, and the woman has been *recently* delivered. In some strong and vigorous women the body resumes its natural state within a few days, and the traces of parturition may have wholly disappeared or have become so ambiguous as to furnish no satisfactory evidence. In others, again, proofs of delivery will be obtainable for a fortnight or three weeks afterwards. In most cases, however, it is difficult, if not impossible, to say, after the lapse of *eight or ten days*, that delivery has certainly taken place, the signs having commonly by that time disappeared. In all cases the earlier the period at which an examination is made, the more satisfactory will be the evidence obtained. Dr. Montgomery once examined a woman, *five days* after delivery at the full time, and he was particularly struck with the degree to which the parts had been restored to their ordinary condition, especially the mouth and neck of the uterus, which hardly differed from their natural and unimpregnated form. ('Cyc. Pr. Med.' loc. cit.) This inquiry becomes of considerable importance in a case of alleged child-murder. When the body of a child is not found until after two or three weeks from the time of its birth, and the suspected woman denies that she has been delivered of a child, she will probably not deny her pregnancy, but may assert that she has had an abortion at an early period. (See a case by Dr. Walther of Labiau in Casper's 'Vierteljahrsschrift,' Oct. 1863, p. 275.) In cases of abortion at an early period the placenta is not always discharged at the time. ('Med. Times and Gaz.' March 12, 1859.) A microscopical examination of the discharges might reveal placental or chorionic structures.

Signs of delivery at a remote period.—A question may arise whether it is in the power of a medical practitioner to determine the period at which delivery took place, *i.e.* how long a time has elapsed. This becomes necessary when, in cases of concealed birth, abortion, or infanticide (some time after suspected parturition), a child is found, and a witness is required to state

whether the time which has elapsed since the birth of the child, either dead or living, corresponds with the supposed delivery of a suspected woman. An opinion may be given, within eight or ten days after delivery, from the state of the breasts, of the discharges (lochia), and of the mouth of the uterus; but it becomes difficult after the sixth day; and when the tenth or twelfth day has passed it is still more difficult. After two or three months it may be regarded as impossible to assign the period of delivery with any degree of precision. (See Devergie, 'Méd. Lég.' vol. 1, p. 446.)

In a case of pretended delivery, contested legitimacy, or disputed chastity (*Fraser* v. *Bagley*, see *post*, DEFLORATION), a medical jurist may be required to say whether a woman has, at any antecedent period of her life, been delivered of a child. This question, it must be remarked, can be raised only in respect to delivery at the full period, since there is no doubt that abortion in the early stages of pregnancy may take place, and leave no traces of such an event discoverable in after-life. Indeed, a few days or weeks are sometimes sufficient to obliterate all evidence of the fact. With respect to delivery at the full term, certain signs have been mentioned, which by some are considered indelible. These are: shining streaks on the skin of the abdomen, a brown mark reaching from the navel to the pubes, and the state of the mouth of the uterus, which is said never to close so effectually as in the virgin. In regard to the appearance of the skin of the abdomen, it may be remarked, that any morbid causes giving rise to a distension of the cavity—as ovarian enlargement or dropsy—will produce the same effect; so, also, to a certain extent, extreme emaciation from a state of obesity. (See 'Med. Times and Gaz.' April 17, 1861, p. 450, on False Cicatrices.) Then, again, these marks on the skin are not always persistent throughout life. Besides, a woman, according to the statements of good observers, may be not only once but repeatedly delivered, without having these marks produced. ('Med. Times and Gaz.' June 9, 1860, p. 583.)

With regard to the state of the mouth of the uterus, it is liable to vary in different females, and to be affected by disease—so that a certain judgment cannot always be formed from its condition. In a woman who has not borne children the mouth of the uterus is in the form of a slit, the angles being bent down, and giving to it the appearance of the os tincæ (tench's mouth). Mr. Whitehead has observed that, in a woman who has borne children, the mouth becomes elongated, and loses the slight bend at each of its extremities; the labia are thickened, and nearly of equal size; the commissures are less clearly defined, and the whole of the neck is enlarged, and not so compact in texture. ('On Abortion,' p. 195.) It must be remembered, however, that the condition of the mouth of the uterus, even in the virgin, varies at each menstrual period. Should there be congenital occlusion of the vagina, or the hymen be found imperforate, this will at once negative a previous delivery; but the latter condition will not negative a previous pregnancy, since a woman may have been impregnated, and have had an abortion in the early stage of pregnancy, without a necessary destruction of the hymen. This sort of negative evidence may sometimes be of great value. There is a total want of good affirmative evidence of delivery at a remote period in the living, if we except that which is furnished by the presence of cicatrices in the vagina or of a cicatrix as a result of a lacerated perineum. It is rare, however, that any decision on this subject is required in medical jurisprudence. It might be demanded, either in a case of infanticide, when a woman was accused of having destroyed her alleged offspring some months or years before; or in a case of contested legitimacy, when she is charged with having substituted a child of which she pretends to have been delivered at some remote period of time.

Feigned delivery.—Delivery has often been feigned by women for the pur-

pose of extorting charity, compelling marriage, or disinheriting parties who have claims to an estate, and in other cases without any assignable motive. Of course, an imposition of this kind could not be sustained before a medical practitioner; and detection is rendered easy, because it is *recent* and not *remote* delivery which is assumed. The latter, would, if pretended, be generally cleared up by an examination, as well as by circumstantial evidence. (See case, 'Med. Gaz.' vol. 19, p. 231; also another by Capuron, 'Méd. Lég. des Accouchemens,' p. 110.)

Can a woman be delivered unconsciously?—Another important question relative to delivery in a living woman is, whether she can be delivered without being *conscious* of it. The signs of delivery may be discovered by a practitioner; the offspring may also be found. She may admit the fact of her delivery, but allege that she was totally unconscious of it. The only medico-legal case in which this plea is occasionally raised is in infanticide; and as the possibility of the occurrence may be questioned, the practitioner must be provided with a knowledge of those facts which medico-legal writers have accumulated respecting it. There is no doubt that a woman may be delivered unconsciously during profound sleep, or while labouring under coma, apoplexy, asphyxia, or syncope; or if suffering from the effects of narcotic poisons, the vapours of chloroform and ether, or intoxicating liquors. It is said also, that delivery has taken place spontaneously while a woman was in the act of dying. This, however, has no bearing on the present question. It is in those cases where a woman, after her recovery, pleads unconsciousness of delivery, that medical practitioners are chiefly consulted. Besides the cases enumerated, hysteria, when accompanied with loss of sense and motion, has been mentioned as a state in which parturition is liable to occur unconsciously. We need not be surprised at delivery taking place under these circumstances, when we consider that the contractile power of the uterus is altogether independent of volition: but, unless the morbid states already mentioned are accompanied by the most profound lethargy and entire loss of sensation, it can rarely happen that the contractions of this organ, in its efforts to expel the child, should not at once rouse a woman into consciousness. We ought particularly to expect this in primiparæ, *i.e.* in those who have never borne children. At the same time it must be remembered that parturition in some women, especially when the pelvis is wide and the child small, may take place with such rapidity and ease as scarcely to be accompanied with pain.

It has been observed that, when a woman has frequently borne children, delivery sometimes takes place without effort, and without any consciousness on her part. On other occasions a woman may lie in a kind of torpor or stupor, or suffer from eclampsia (puerperal convulsions), and have no recollection of her delivery. The following case is possible:—A woman may be delivered while under the influence of eclampsia, which might have attacked her before labour set in; and after delivery, but before complete recovery, she might become maniacal—a not unfrequent condition—during which interval she might have killed or injured her child; or the child might have been born dead, or an accidental injury might have occurred to it. She would with truth assert her entire ignorance of it. Her statement would be verified by a bitten tongue, and a congested conjunctiva or face. Should albumen be found in the urine this fact would still be more confirmative. Of course eclampsia might occur without these results. The statement might be disproved by finding that her actions had shown care and design in other circumstances, at the time she said she was unconscious. Mr. King has described the case of a woman, æt. 36, the mother of nine children. She received his assistance in her tenth labour: when summoned she was lying calmly and placidly in bed, and was perfectly insensible. He found that the child had been expelled with the

placenta. The woman did not recover her sensibility for ten or twelve hours, and then stated that she had no recollection of the birth of the child, or of any circumstances connected with that event: she suffered no pain or uneasiness. Another case is mentioned by this gentleman, in which sensation appeared to be entirely paralyzed during labour. ('Med. Times,' May 15, 1847. p. 234.) It is beyond a doubt that profound lethargy occasionally makes its appearance about the time of delivery. Dr. Schulze met with a case in which a woman remained in a state of sleep for three days, and was delivered while in this unconscious condition: on awakening, she had no recollection of having suffered any pain during delivery. ('Ann. d'Hyg.' 1845, 1, 216; 'Med. Gaz.' vol. 36, p. 40.) Dr. Montgomery relates the case of a lady, the mother of several children, who, on one occasion, was unconsciously delivered during sleep. ('Cyc. Pr. Med.'; see also case in 'Brit. and For. Med. Rev.' No. 9, p. 256.) Dr. Palfrey describes a case in which labour commenced and progressed in a woman to the second stage during sleep. ('Lancet,' 1864, 1, 36.)

The results obtained by the use of the vapours of chloroform and ether show that the expulsive efforts of the uterus are often as energetic in the unconscious as in the conscious state. It may appear extraordinary, however, that a primiparous woman, unless rendered unconscious by narcotic substances, should be delivered without suffering pain: nevertheless, a case of this kind is recorded by Dr. Wharrie. The woman's age was 21; she had been in labour about six hours; she complained of no pain, and the child was born without effort or consciousness. The child was healthy but small, weighing rather more than four pounds. ('Cormack's Journal,' January 1846, p. 12.) Dr. W. Case, of Chicago, Ill., U.S., states that he met with an instance of this kind in December 1860. A Mrs. B., married about ten months, a healthy young woman expecting her confinement, was seized with some pains in the lumbar region. On examination, the os uteri was found to be three-fourths dilated. As the pains showed no signs of returning, Dr. Case left her. He was suddenly called to her in about six hours, and he then found that the head of the child had been wholly expelled during the profound sleep of the mother. In a moment the body was delivered, and the placenta followed it, the uterus contracting with scarcely any pain. The patient said she had dreamed something was the matter with her, and awoke with a fright, probably at the instant that the head was expelled. ('Amer. Jour. Med. Sci.' January 1868, p. 279.) Some remarks on this unconscious state of women during delivery, by Dr. Seydel, will be found in Horn's 'Vierteljahrsschrift,' 1868, 2, 317, under the head of *Eclampsia parturientium.* Notwithstanding these cases, it is in the highest degree improbable that any primiparous woman should be delivered during *ordinary sleep* without being roused and brought to a sense of her condition.

There is another case in which a woman may state that her delivery took place unconsciously; and this, owing to its being one of the most common species of defence set up by women charged with child-murder, must here claim our attention. Thus she will allege that, while suffering from pain, she felt a strong desire to relieve her bowels: that she went to the water-closet for that purpose, and was there delivered, without knowing anything of the occurrence until it was too late to save the child. This kind of desire is a very common symptom of the parturient state; and in private practice it is often difficult to restrain a woman from yielding to the feeling, when it certainly would be attended with hazard to the child. ('Med. Times and Gaz.' April 4, 1857, p. 347.) We must therefore admit that an accident of this kind may occur; although here, as in every other instance in which unconscious delivery is pleaded *bonâ fide*, a medical witness ought to inform himself, or be informed, of all the particulars which are stated to have attended *delivery before* he gives an answer applicable to the case. As a general rule,

it cannot be denied that delivery may take place under these circumstances, and a woman not be conscious of it; but before we make this admission in regard to any particular instance, we ought to have a statement of all the facts from the woman herself. It is thus that we shall avoid the risk of seeing a premature medical opinion set aside by the subsequent production of circumstantial evidence. Besides, it has been properly observed that, *after* an accident of this kind, a woman cannot be ignorant of her having been delivered. Women who have raised this plea in cases of child-murder have often been known to maintain that they were unconscious of their pregnancy, and thus have attempted to excuse themselves for not having prepared the articles necessary for childbirth. It is possible that a woman, especially one who is pregnant for the first time, may not be aware of her pregnancy in the early stage; but it is rare for one to advance to the full term without being conscious of it. Women who have borne children have sometimes consulted medical men; and although nearly at full term, they have not been conscious of their state. In the majority of instances, it may be presumed that a woman thus situated must have had some reason to *suspect* her condition; and if only a suspicion existed in the mind of one who did not contemplate the destruction of her offspring, there assuredly would be many circumstances forthcoming which would at once establish her innocence. If this remark applies to married women, it applies with still greater force to those who are unmarried, since the fact of illicit connection, and the fear of its consequences, must render them peculiarly alive to all those changes which, by common repute, take place in the female system during pregnancy.

Post-mortem parturition.—In a former part of this work (vol. 1, p. 95) I have referred to a case in which delivery took place from spontaneous causes after the death of the woman. Several instances of this kind have been recorded ('Med. Press,' Oct. 9, 1872), and they have all arisen from the same cause—the extrusion of the fœtus from the relaxed uterus as a result of the accumulation of the gases of putrefaction. Post-mortem parturition formerly gave rise to many superstitious notions, but the facts connected with this condition are now fully understood. (See 'Lancet,' 1872, 1, 596.) If the body is not in a decomposed state, it is unusual to find the uterus retaining the power of expelling the fœtus by its own muscular contractions after the death of the woman. It is obvious that in certain cases this condition might be used to cover and conceal a case of criminal abortion. The subject has been lately brought before the Medico-Legal Society of Paris by my friend Dr. Louis Pénard. ('Ann. d'Hyg.' 1873, 1, 213.) He was required to report on an alleged case of delivery thirty-six hours after the death of the woman, in which the question of expulsion by gaseous putrefaction could not arise. In July 1872 a young woman died under suspicious circumstances after eight days' illness. It was only just before her death that the medical man in attendance discovered that she was pregnant, and had probably reached the fifth month. He made no examination after death, and when the body was laid out there was no unusual appearance. When raised to be placed in a coffin thirty-six hours after death, a fœtus fell from between the legs of the corpse. On examining the body, the uterus was found with the placenta attached, inverted and extended from the outlet. Dr. Pénard, after fully considering the case as submitted to him, came to the conclusion that after the death of the woman, the uterus would not retain the power of expelling the fœtus, and inverting itself by spontaneous muscular contraction. No doubt there are great difficulties in admitting that a spontaneous action of the uterus after the death of the woman should be so powerful as not merely to expel the fœtus and placenta, but actually to invert or cause prolapsus of the organ; still the occurrence of such cases rests upon good authority. (See 'Obstetric

Transactions,' 1873, p. 255.) In these rare instances it is probable that the women had reached the full term, and parturition might have commenced before death. In the case related by Dr. Pénard the woman had only reached the fifth month, and at this stage of pregnancy it is improbable that the post-mortem contractions of the uterus, without any assignable cause, would have operated to expel the child and invert the organ. It is more reasonable to suppose that in this case there had been criminal interference. ('Lancet,' 1872, 1, 517, 596, and 2, 119.) The subject of post-mortem parturition has been lately brought before the Obstetric Society by Dr. Aveling ('Obstet. Transactions,' 1873, 14, 240), and he has here reported thirty cases of this kind. The principal conclusions at which he has arrived are that the uterus may expel its contents after death even in cases in which no symptoms of natural parturition can be discovered before death. He also considers that expulsion of the placenta, spontaneous evolution of the fœtus, and prolapsus, inversion and rupture of the uterus, may equally take place post-mortem. He refers these effects either to a contracting power remaining in the uterus after the death of the rest of the body, or to the pressure exerted on the uterus by the gases of putrefaction, the latter being the more frequent cause. His cases have also led him to a conclusion having an important bearing on the medico-legal relations of this subject—that after the death of the woman a child may continue to live in the uterus for many hours, but when a woman dies undelivered no time should be lost in removing the fœtus. (Op. cit. p. 255.)

Signs of delivery in the dead body.—It will now be proper to examine the signs of delivery which are derivable from an examination of the body of a woman who has died after delivery. Occasionally we may obtain some history of the case during life, by which our labour will be much facilitated; but, on the other hand, every fact may be studiously concealed from us, and then we may be required to prove not only the delivery but the previous pregnancy. These investigations relative to pregnancy and delivery in the dead body, are almost exclusively confined to cases of criminal abortion, where the contents of the uterus have been expelled at the sacrifice of the life of the woman. Death commonly ensues in these cases within two or three days after delivery, and then satisfactory proofs are obtainable by a post-mortem examination; but if the woman has survived three or four weeks, it will be as difficult to determine delivery in the dead as in the living subject. This remark applies to delivery at the full period; for if the uterus has expelled its contents in the first months of pregnancy, the traces of this expulsion will have generally disappeared in the course of a few days.

The following may be taken as the chief appearances when the body of a woman is examined soon after delivery at the *full* period. The uterus is like a large flattened pouch from nine to twelve inches long, its mouth being wide open. The cavity contains coagula of blood or a sanguineous fluid; and its surface is covered with the remains of a decidua—the outermost membrane of the embryo or fœtus. In the part to which the placenta has been attached, the substance of the organ appears exposed, presenting several large semilunar or valvular openings. This portion of the uterus is of a very dark colour, so as to have given rise to a suspicion that the organ was gangrenous. The blood vessels are extremely large and numerous. The Fallopian tubes, round ligaments, and ovaries are so vascular (full of blood) that they have a purple colour. The spot whence the ovum has escaped is more congested than the rest of the ovarian surface. Obstetric writers differ greatly in their statements respecting the size of the uterus at different periods after parturition; and these differences may be explained, partly by the fact that the uterus contracts more rapidly in some women than in others, and partly, perhaps, by the circumstance of the birth having been, in some instances, premature. M. Toulmouche has

reported some instructive cases of delivery at different periods, showing the influence of time on the appearances. ('Ann. d'Hyg.' 1864, 2, 349.)

Dr. Montgomery states that, after delivery at the full period, and under perfect contraction of the uterus, if the body is examined within a day or two, it will be found seven inches long and four broad. Its substance, on making a section, will be from an inch to an inch and a half in thickness, and will present the orifices of a great number of large vessels. At the end of a week the uterus is between five and six inches, and at the end of a fortnight about five inches in length: the density of its structure has during this period increased, but its substance has considerably diminished. The inner surface is still bloody, and covered partially with a pulpy membrane resembling the decidua. The orbicular direction of the fibres around the internal orifices of the Fallopian tubes is at this time very distinct. In about a month the uterus will have become fully contracted; but the mouth rarely, if ever, closes so completely as in the virgin state. In a case examined by Dr. Barnes, in which a primipara, æt. 26, died from puerperal fever on the *sixth day* after delivery, the following appearances were met with in the uterus. The internal surface was blackened and congested, especially in that part to which the placenta had been attached. There was here the appearance of suppurative action. The substance of the uterus was healthy; there was no pus in the sinuses. The os uteri showed considerable ecchymosis. The vagina was healthy; the iliac veins contained nothing but loosely coagulated blood. There was in the left ovary a small well-marked corpus luteum, having a central cavity. ('Med. Gaz.' vol. 41, p. 294.) This condition of the uterus must not be confounded with the appearances which are observed when death takes place during *menstruation.*

Dr. Judee found in the bodies of three women who died during menstruation that the uterus was somewhat enlarged—its walls being thickened and its interior lined with a reddish gelatinous layer about 1-12th of an inch thick, consisting of a capillary network of vessels, enclosed in a mucous-like membrane. When this was removed, the uterus below was found to be white and firm. The interior of the neck was of a greyish colour: the lips were swollen, of a dull-red, bluish, or even black colour. On compressing this part small drops of blood issued. This was not observed either in the neck or body of the vagina. A section of the uterus presented only the normal fibrous tissue: but at the level of the mouth (os uteri) there was a mass of tissue resembling a portion of apoplectic lung. The blood during menstruation, according to this gentleman, issues entirely from the highly congested mouth of the uterus. ('Gaz. des Hôpitaux,' No. 39, and 'Med. Times and Gaz.' June 23, 1855.) An ecchymosed condition of the neck of the uterus is very commonly found as the result of even an easy labour, and therefore forms a good guide when present. This point must be borne in mind in reference to criminal abortion, inasmuch as the neck has the appearance as if violence had been employed. From the statement of appearances given above, it will be seen that there must be considerable difficulty in determining the period prior to death at which delivery took place. The difficulty is increased when a woman has been prematurely delivered, or when death has not taken place until some time after delivery. A medical opinion may be then in some degree strengthened by searching for those signs which have been described as characteristic of delivery in the living. These, if present, will always furnish strong corroborative evidence, not only of the fact of delivery, but of the period at which it had probably occurred.

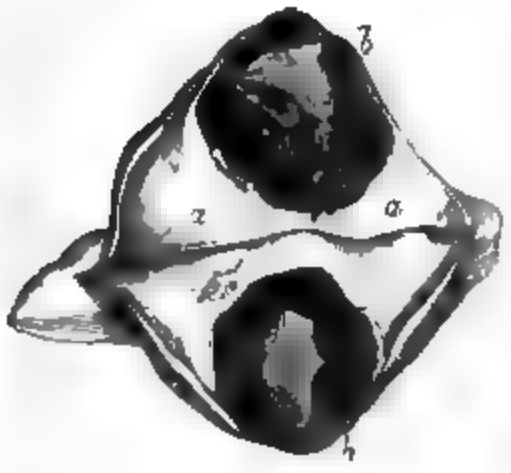
Evidence afforded by the presence of corpora lutea.—The condition of the *ovaries* has been considered to furnish strong evidence, in the dead body, not so much of delivery as of previous pregnancy. These organs, when examined soon after delivery, are of a deep purple colour, owing to their extreme vascularity. If the woman has really been pregnant we may expect to find, on

one of them, the appearance which is denominated a *corpus luteum*. (See Fig. 143.) The accounts given by obstetric writers of the characters of corpora lutea, and the evidence which they are capable of furnishing in legal medicine, are very conflicting. According to Dr. Montgomery, in a *true* corpus luteum (*i.e.* of pregnancy) the ovary presents a protuberance with a distinct cicatrix on the part whence the ovum has escaped. The protuberant portion will be found on section to have an oval form and to be of a dull yellow colour—hence the name *corpus luteum*. It is full of blood, and in texture resembles the section of a kidney. In the centre of this section there may be either a *cavity* or a radiated white *cicatrix* (scar), according to the period at which an examination is made. The cavity remains for about three or four months after conception, and is surrounded by a strong white cyst; as gestation advances the opposite sides approximate, and a radiated white cicatrix results. The size and vascularity of the corpus luteum are considerably diminished by the time gestation is completed, and in about five or six months afterwards—*i.e.* fourteen months after its first formation—it disappears altogether from the ovary; so that the corpus luteum of one conception is not found with that of another, unless a premature expulsion of the contents of the uterus has taken place. ('Cyc. Pr. Med. Pregnancy,' p. 496; see also 'Edinburgh Monthly Journal,' Jan. 1845, p. 58.) The presence of a corpus luteum, as it is here described, does not prove that a woman has borne a child. In the opinion of some obstetric authorities, it establishes that conception has taken place; but the embryo may have been converted into a mole or a blighted fœtus, and expelled at an early period. It was formerly supposed that *one* true corpus luteum only was met with in pregnancy with one child; but among other facts which show that such an inference is erroneous, is a singular case reported by Dr. Renaud to the Manchester Pathological Society. He examined the body of a woman who died in the seventh month of her pregnancy, and from whose uterus he extracted a fœtus. There were no traces of a blighted ovum. The ovary, however, presented *two* distinct and well-marked corpora lutea. ('Med. Gaz.' vol. 39, p. 599.) Had the ovary alone been examined, it might have been supposed that this female had had twins.

Fig. 143.

External appearance of ovary with corpus luteum a few days after impregnation.

Fig. 144.



Section of the same ovary with corpus luteum.

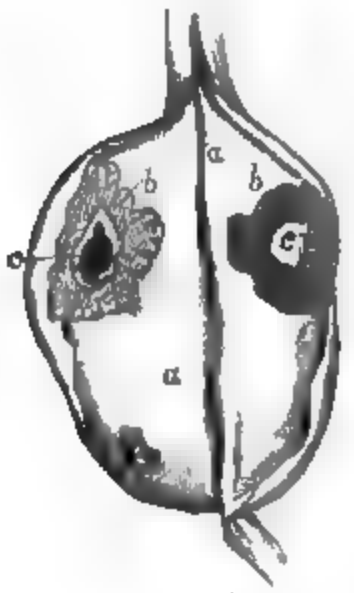
The corpus luteum is of its greatest size in the early state of pregnancy, and gradually diminishes as gestation advances. From the third month to the full term it has a dingy yellow colour on section. The annexed illustrations are taken from cases which occurred to Dr. Paterson, and have been published by him in the 'Edinburgh Medical and Surgical Journal' (vol. 53, p. 49). Fig. 143 shows the external appearance of the ovary in the case of a woman who died a *few days* after impregnation: *a* represents the body of the ovary; *b* the corpus luteum, as it appears on the exterior. Fig. 144 represents the same ovary, in which a section has been made through the corpus luteum.

In Fig. 145 a section of an ovary is represented, showing the appearance of a corpus luteum in a woman who died in the *second month* of gestation; *a a*, the

body of the ovary; *b b*, the plicated or folded structure of the corpus luteum; *c*, the central cavity, frequently containing blood. This cavity does not always exist.

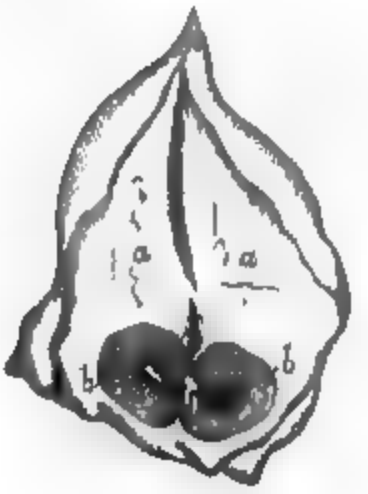
Fig. 146 represents a section of the ovary of a woman who died thirteen days

Fig. 145.



Section of ovary with corpus luteum, second month.

Fig. 146.



Section of ovary with corpus luteum at the full period.

after delivery at *the full period*: *a a*, body of the ovary; *b b*, the corpus luteum seen in section, with a central cavity. It was of a yellowish colour in the shaded portion. These engravings represent the ovaries and corpora lutea of their natural size.

According to Dr. Paterson, the *false* corpora lutea, or those which are produced irrespective of pregnancy, may be distinguished from the *true*, by the following signs. The false bodies have in general an irregular form, and want either a central cavity lined with a distinct membrane, or a *puckered cicatrix*: they have no concentric radii, and are frequently numerous on both ovaries. Dr. Ramsbotham agrees with Drs. Montgomery and Paterson in considering that the true corpus luteum—*i.e.*, that derived from conception—is known either by its having a *central cavity*, sometimes unoccupied, at others filled with the blood which was effused at the time that the coats gave way, or, if it should be of more ancient date, by its presenting stelliform *radiated white lines* (a puckered cicatrix), resulting from the closing of this cavity. ('Obstetric Medicine,' p. 49.) Dr. Paterson relates the following case, in order to show that the presence or absence of a *true* corpus luteum may be sometimes important in a question of disputed identity in the dead. Four medical students were charged with having disinterred the body of a lady; but the body was so disfigured that the deceased could not be identified by her relatives. In one of the ovaries a *true* corpus luteum was reported to have been found; a discovery which, if true, proved that it could not be the body of that lady, since she was a virgin, and advanced in life. On the trial the medical evidence was very conflicting; one half of the witnesses maintained that the body which was found on the ovary was a true corpus luteum, while the others contended that it was not! - so that the question was left undetermined.

In opposition to these views Dr. Knox, an experienced anatomist, asserts that there is no distinctive character whereby what is called the *true* can be distinguished from the *false* corpus luteum, the only difference being that the latter is smaller. What have been called corpora lutea may in his judgment be formed in virgin animals, independently of intercourse; and the time of their disappearance from the ovary varies from three months to an almost indefinite

period. ('Med. Gaz.' Dec. 22, 1843.) That there is considerable difficulty in distinguishing true from false corpora lutea, is proved by reference to a case reported in the 'Medical Gazette' (vol. 34, p. 623), in which two experienced observers differed. Dr. Lee thought that a preparation which was the subject of examination was not a corpus luteum, while Mr. Wharton Jones thought that it was—founding his decision on a microscopical examination. This difference of opinion shows that a distinction is by no means so simple a matter as some writers assert. Mr. W. Jones agrees with Dr. Knox in considering that a corpus luteum may occur in the ovaries independently of intercourse, and that the existence of one in this organ, would therefore afford no proof whatever of intercourse having taken place. The discovery of the *ovum* in the uterus, *in process of development*, could alone, in the present state of our knowledge, warrant an affirmative opinion on this point in a Court of law; and this I believe to be the safest view at present of this much-contested question. On the other hand, the absence of a corpus luteum from the ovary would not in all cases warrant an opinion that conception had not taken place.

The researches of Professor Bischoff ('Med. Gaz.' vol. 35, p. 443 *et seq.*) have also shown that the production of a corpus luteum is by no means necessarily connected with *conception*. The ova undergo a periodical maturation about the time of menstruation, and escape from the ovary or are extruded whether there be conception or not; hence fecundation is more likely to occur when intercourse is had about this period. This is also the opinion of Raciborski; indeed, some physiologists regard menstruation as the alternative of conception ('Dub. Quart. Jour.' May 1846, p. 426), and consider that there is no period so favourable to conception as that which immediately follows the cessation of the menses. In this respect the Koran appears to conflict with the laws of physiology, since it is laid down by Mahomet that women are impure for eight days before and eight days after menstruation. (Rostan, 'Cours d'Hyg.' t. 2, p. 438.) The same custom, according to Meigs, exists among the Jews as to the period at which a woman is clean after the cessation. ('Obstetrics,' p. 128.) It is not a little singular that this comprises the period at which, according to modern theories, conception most readily takes place. Women may conceive during the flow of the menses: it is also well ascertained that a woman who has never menstruated may conceive, and that conception may take place one or two days *before* the period of menstruation. Raciborski has met with several instances in illustration of these views. ('Advances in Physiology,' Baly and Kirkes, p. 59.)

In this theory we have an explanation why corpora lutea, or bodies closely resembling them, are so often found in virgin animals, and it would also account for those differences of opinion among experienced men, which almost invariably occur when it becomes a debated question whether a corpus luteum is true or false. The theory would further explain cases like the following, reported by Mr. Elkington:—A woman, aged 42, who had not borne a child for *seven years*, died from diseased lungs. On the right ovary were two corpora lutea, and the Fallopian tube on that side was larger and more congested than on the other. The deceased expected to menstruate on the day she died, or at least one day later. ('Prov. Med. Jour.' Feb. 1845, 104.) Dr. Ritchie, of Glasgow, has by his results confirmed the views of Professor Bischoff and Mr. W. Jones. He calls these bodies 'corpora menstrualia vel periodica.' They may, in his opinion, be formed independently of pregnancy, and may possibly assume all the characters of what are called corpora lutea, by some reflex excitement in the uterine organs. According to this gentlemen there are no fewer than eight varieties, which are liable to have their characters intermixed. ('Med. Gaz.' vol. 36, pp. 385, 1058.) A case in which a well-marked corpus luteum was found coinciding with menstruation in a woman who had been executed,

is reported by Dr. Michel. ('Med. Gaz.' vol. 44, p. 307.) Such an appearance might create a difficulty in the case of a woman who had aborted in the second or third month of pregnancy, and in whose uterus no remains of a decidual membrane were found. Dr. Hicks has pointed out that, in cases of abortion at an early period, the corpus luteum in the ovary may be found semi-developed or in a state of arrested development. Under a hasty examination, it might be pronounced not to be the corpus luteum of pregnancy. A man was accused of drowning a girl who was alleged to have been pregnant by him. Dr. Hicks found a corpus luteum in the ovary, but not developed to its full extent—the cavity was not defined by a lining membrane. In the uterus there was an appearance as if something had been attached near the fundus. The interior of the organ was denuded of the pulpy mucous membrane which exists in health. According to the evidence the deceased had miscarried three weeks before she was found drowned. From the appearances, and the thickening of the uterine walls, there could be no doubt that she had reached the second or third month of pregnancy. The undeveloped state of the corpus luteum was thus explained. On another occasion Dr. Hicks examined the ovary of a girl who had had intra-uterine tubal pregnancy, which had caused her death at about the third or fourth month. In this case the corpus luteum had no cavity and no definite boundary between what was the cavity and the walls. It was very pale, and the interior was transparent and colourless. It might have been easily overlooked. These facts prove that in an unknown case the non-development of a corpus luteum may be owing to the early period at which the woman has aborted. The perfect characters are only likely to be found when a woman has gone to the full term.

A full account of the general and microscopical characters of true and false corpora lutea, by Dr. Renaud, will be found in the 'Edinburgh Monthly Journal,' August 1845, p. 589. (See also 'Recent Advances in Physiology,' by Drs. Baly and Kirkes, p. 46.) These gentlemen conclude from their researches, that cases can seldom occur in which the mere presence of a corpus luteum can be taken as a proof of previous impregnation; and they consider the following rules to be deducible from the facts which they have collected:—1. A corpus luteum in its early stage (that is, a large vesicle filled with coagulated blood, having a ruptured orifice, and a thin layer of yellow substance within its walls) affords no proof of impregnation having taken place. 2. From the presence of a corpus luteum, the opening of which is closed, and the cavity reduced or obliterated (only a stellate cicatrix remaining), no conclusion as to pregnancy having existed can be drawn, if the *corpus luteum be of small size*, and does not contain so much yellow substance as would form a mass the size of a small pea. 3. A similar corpus luteum of larger size than a common pea would furnish strong *presumptive* evidence, not only of impregnation having taken place, but of pregnancy having existed during several weeks at least; and the evidence would approximate more and more to complete proof, in proportion as the size of the corpus luteum was greater. (Op. cit. p. 57.)

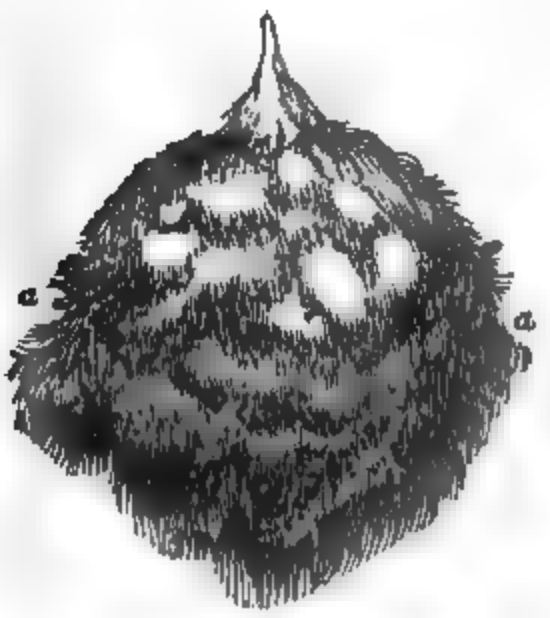
From this statement, it will be perceived that the difference is only relative and arbitrary, chiefly depending on the *size*: and as in pregnancy, corpora lutea are found of variable size, while in menstruation they may, under great excitement, attain a large size, it is obvious that no safe inference can be drawn from their presence, irrespective of other signs of impregnation. The terms *true* and *false*, therefore, are inappropriate; and serious mistakes may arise by a reception of evidence on this point. The law requires absolute certainty, not merely probability or presumption; and, in the present stage of physiology, the proof falls short of that which is necessary to guide the verdict of a jury. At a trial for attempted abortion, *Reg.* v. *Goodall* (Notts Lent Assizes, 1846), on examining the body of a woman on whom the attempt had been

made, it was alleged that she was *not* pregnant: but on inspecting the ovary, a corpus luteum was there discovered. This was described as *false*, apparently because there was no other proof of impregnation. Had an embryo or its membranes been found in the uterus, or had there been some proof of their expulsion, it would probably have been described as *true*. Dr. Meigs, an experienced writer, says that corpora lutea may vary in size, but in all cases they are real. Physiologically speaking, they do not admit of a division into true and false. ('Females and their Diseases,' 1848, p. 43; see 'Ed. Mon. Jour.' Oct. 1851, p. 305.)

From these considerations, therefore, it appears to me that the only conclusion to which we can come is, that medical evidence respecting the nature of a corpus luteum in an unknown case, if received by a Court of law at all, should be received with the greatest caution, and only from an obstetric expert of great experience. The old doctrine on this subject, that the presence of such a body on the ovary affords *certain* and undeniable evidence of impregnation, may be regarded as completely subverted.

Characters of the ovum or embryo to the sixth month.—Hitherto the examination has been confined to the woman, but it is now necessary to describe the characters of the ovum or embryo, and its enveloping membranes at the early stages of pregnancy, since, when this can be procured, it may furnish good medical evidence. If the ovum is expelled within a *month* after conception, it is scarcely possible to detect it, owing to its small size, and its being enveloped in coagula of blood. Burns examined three uteri, within the first month, where no expulsion had taken place, but even under these favourable circumstances he failed in discovering the ovum. At first the ovum contains no visible embryo, but it appears merely to consist of vesicular membranous coverings. According to this authority, when first distinctly seen through its membranes, it is of an oblong form and about a line (the twelfth of an inch) in length. At the *sixth week* it is slightly curved, resembling, as it floats, a split pea. In the *seventh week*, it is equal in size to a small bee; and by the end of the *second month* it is bent, and as long as a kidney-bean.

Fig. 147.



The Ovum in its membranes at the first month.

Fig. 147 represents the appearance of the ovum at the end of the *first month*. All that is seen here is the loose shaggy surface of the chorion or second membrane (*a a*). The embryo itself is not seen, as this is enclosed within an inner membrane, called the amnion, which contains a fluid in which the embryo is immersed.

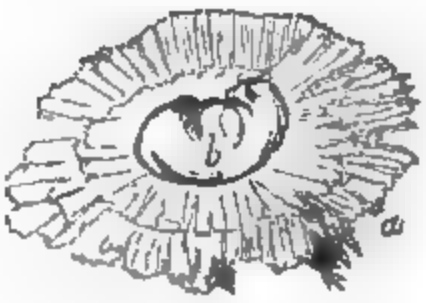
Fig. 148, p. 173, represents the embryo (*b*) at *six weeks*, surrounded by its membranous coverings, and, on the outside, the chorion (*a*).

Fig. 149, p. 173, shows a more advanced stage of the ovum, namely, at about *two months* after impregnation. The embryo (*b*) is assuming a fœtal form—the head being downwards, and the place for the eye already indicated: *a a*, the chorion; *c*, a portion of the decidua or external membrane.

These engravings are taken from actual specimens in the Museum Collection of Guy's Hospital. They appear much larger than the description above given would lead a reader to suppose, but this is owing to the original specimens being suspended in spirit. By this they acquire an artificial bulk, *owing to the flocculent* surface of the chorion spreading out to its fullest extent.

When removed from the liquid medium, they collapse into a much smaller bulk, and it is thus that they are liable to be carried away and lost in a discharge of blood. If the embryo cannot be found, some portions of the membranes —especially of the decidua or uterine membrane— may be detected in the uterus.

Fig. 148.



The Embryo in its Membranes at six weeks.

In reference to the terms here employed, the 'ovum' signifies the embryo and its membranous coverings; the 'embryo' is the body which is afterwards converted into the fœtus; 'fœtus' is the name applied to the embryo after the third or fourth month of gestation.

After the second month development goes on rapidly: the features are in part well-marked, and the limbs are gradually formed. At the *third month*, the fœtus weighs from one to two ounces: when stretched out it measures about three inches, and the genital organs, although the sex is not then distinguishable, are large in proportion to the rest of the body. The membranes are larger than a goose's egg. At the *fourth month* the fœtus is from five to six inches long, and weighs from two to three ounces; at the *fifth month* it measures from six to seven inches, and weighs from five to seven ounces; and at the *sixth month*, its length is from eight to ten inches, and its weight about a pound. (For the characters of the child beyond this period, see 'INFANTICIDE.') The great difficulty will consist in determining the nature of the supposed ovum or embryo between the second and third month. In making the examination, it should be placed in water, and all coagula gently washed away from the membranous coverings or removed by some blunt instrument. Alcohol may be used as a substitute for water, after the blood has been removed. If the embryo cannot be found, the decidua and chorion or portions of them may be recognized: the former by its forming the outer investment, with its smooth internal and rough external or uterine surface; the latter by the villous or shaggy appearance of that portion of it which would have become the placenta.

Fig. 149.

Embryo and Membrane of the second month.

Between the third and fourth month the fœtus may be commonly identified without much difficulty. The ovum in many instances escapes first, leaving the decidua behind. This comes away after a time, but it is important to remember that, in some states of the virgin, decidua-like structures are shed from the uterine mucous membrane, which, when examined by the microscope, are in essence like the true decidua. Both are constituted of the innermost portion of the uterine mucous membrane, and contain all its elements.

Moles.—The true mole is the result of conception, the fœtus of which has died in consequence of the effusion of blood into the decidua and the various membranes, and, should a placenta exist, into its structure. The sac of the amnion has frequently burst, and the ovum has escaped, or it has died and been dissolved by the liquor amnii or serous liquid, which is found turbid. The remains of the umbilical cord are frequently found on the interior of the amnial sac. Nodules are found projecting into the cavity, which are produced by the effusion of blood outside the sac. Sometimes the cavity is almost ob-

literated, the main bulk being made up of effused blood. In the varieties of moles it is not difficult to recognize all the membranes; the microscope will always enable the examiner to detect the chorion villi. Such a mole of course proves conception, but solid bodies are expelled from the uterus which have not this origin, and may occur in the virgin: these are called false moles. A clot of blood may become dense, and, losing some of its colouring-matter, exhibit appearances which cannot be distinguished from the true mole except by the microscope. Polypi may also resemble a mole; but a careful examination would readily show the absence of ovular membranous structures. Sometimes a large exfoliation of the vaginal epithelium may take place, and before its expulsion become condensed, so as to create suspicion. The microscope will, however, show that it consists of tesselated epithelium only. Moles may coexist with true pregnancy in a case of twins. The symptoms accompanying a mole resemble those of pregnancy; and the appearances produced by its expulsion are not to be distinguished from those attending the abortion of a fœtus at an early period of gestation. The only means of distinction would be derived from an examination of the expelled matters. The local injury produced by the expulsion of these bodies on the organs of generation, is by no means as great as that caused by delivery at the full period.

Vesicular mole (*Hydatiniform degeneration of the chorion*).—When by some accident the fœtus dies at any time before the complete formation of the placenta, the villi of the chorion, instead of completely dying, retain a certain amount of vital force; the consequence of which is that in some parts growth goes on imperfectly, serous fluid is effused within, and the part is distended into a globular form. This, occurring frequently in the course of each villus, gives it a beaded appearance, and the whole mass appears something like a bunch of grapes. The size, however, of each vesicular body varies much in different specimens, and also in different portions of the same specimen, some being only detectable by the microscope, while others are as large as the largest grape. On the largest kinds are generally to be found small villi, undergoing more or less the same process of change.

Thus it will be observed that the vesicular growths are attached one to another by delicate threads, the unchanged stem of the villus. This will readily serve to distinguish them from true *hydatids* (Dr. Graily Hewitt, 'Obstetric Transactions,' vol. 1, p. 249), concerning the distinction between which much confusion has existed, and questions have arisen as to whether the vesicular mole can exist or be produced in a virgin. From what has just been shown it will be perceived that this latter cannot arise except as a result of impregnation. It is exceedingly rare to find *true* hydatids in the uterus at all, still more so for them to be discharged through the cavity of the uterus. Dr. Hicks informs me that no authentic account of such a case is on record. But even if it were not so, the slightest examination by the unaided eye would show whether the vesicles were attached to each other as above mentioned, or the smaller enclosed within the larger cysts, or floating without any attachment whatever. The use of the term 'hydatid' does much to perpetuate the error. How long this vesicular mole may remain in utero is uncertain; accurate information is required on this point. Certainly it may remain more than a year, and possibly many years. The rapidity with which they grow is very great, but this is readily explained by the fact that it is a simultaneous enlargement of myriads of parts. A woman at the third month of pregnancy may be as large as at the seventh month; she may ultimately attain a size exceeding that of the full term. Cases of twin-conception are not uncommon, in which one ovum becomes vesicular, the other going on towards maturity. (Dr. Hall Davis, 'Obstetric Transactions,' vol. 3, p. 177.) Again, one ovum *may become* vesicular, while the other is converted into a fleshy mole. In

some rare cases a portion only of the chorion is changed into this form of mole, while the proper formation of the placenta may go on in the normal manner.

The question here arises—Can the mature placenta be so converted? Should a portion be left behind in a healthy state, can it assume the vesicular degeneration? From all that is at present known, this is exceedingly improbable. As a result of observations made of late years, it appears that the change only takes place in the *chorion* villi before the formation of a placenta. It is much more probable that, should a woman have no intercourse after labour, but yet expel a true vesicular mole, that it was a twin ovum which was not expelled during labour. In an early stage of pregnancy a decidual covering will always be found more or less complete around this mole, but if the size of the mass is great, then, although present, it will be less observable, being spread over a larger surface. A *corpus luteum* will also be found, but not so perfectly formed as in normal pregnancy.

The ordinary symptoms of pregnancy accompany this state, although in all forms of mole-pregnancy it is imperfectly marked, or only proceeds to a certain point. (See case, 'Obstetric Record,' vol. 1, p. 21.) It is also to be remembered that the effects of the expulsion of a mole are very similar to those of abortion. These facts may have an important bearing on medico-legal practice, and in this respect the following case, reported by the late Dr. Chowne to the Westminster Medical Society, November 1844, will be found of interest: —A woman was seized with pains resembling those of labour, and a mass of uterine hydatids was expelled, which was supposed to have been in the uterus about five months. When the woman was examined, thirty-six hours afterwards, there were all the signs of recent delivery about her. The parts of generation presented the usual appearances met with in the expulsion of a fœtus: the breasts were enlarged, the areolæ elevated, of a brown colour, the follicles prominent, and the organs evidently containing milk. The occurrence of this case led Dr. Chowne to think that, had the body of an infant been found with marks of violence upon it, concealed in the house where this woman had lived, it would probably have been pronounced to have been her child. A medical man might have strengthened the suspicion of criminality by declaring that there were all the signs of recent delivery about her. It may be observed, however, that in such a case the woman would probably have stated that no child, but some tumour, had come away from her; and a medical man would not be justified in swearing that appearances of delivery absolutely indicated, under all circumstances, that a woman must have been delivered of a *child*. On the contrary, it is a well-known medical fact, that similar appearances may arise from the expulsion of the various forms of mole. (See a case of Mr. Pearson's, 'Medical Times,' Dec. 30, 1848.) Circumstantial evidence would be against her only on the assumption that some person had wilfully concealed or made away with the substantial proofs of her innocence, *i.e.* the mass which had been expelled. Dr. Fischer met with a case in which a woman gave birth secretly to a child, whose death led to a charge of child-murder against her, and two months afterwards she passed a mole or blighted fœtus, in reference to which a question of superfœtation was raised. (Horn's 'Vierteljahrsschrift,' 1866, 2, 22.)

Some of the questions which have been here considered were raised on the trial of *Angus* for the murder of Miss *Burns*, at the Lancaster Assizes, 1808. It was alleged that the deceased was pregnant—that the prisoner had administered corrosive sublimate to her to procure abortion, and that this had caused her death. A question arose at the trial relative to the appearances of the uterus as indicative of recent delivery. On examining this organ, it was found considerably enlarged, and on its inner surface was a mark four inches in diameter,

plainly discernible, to which a placenta had been apparently attached. The mouth of the uterus was much dilated. Indeed, the appearances were described to be such as might have been expected to be found two hours after the birth of a full-grown fœtus. The evidence respecting previous pregnancy was conflicting, and the prisoner was acquitted, because the death of the deceased could not be distinctly traced to any criminal act on his part. The ovaries were not examined until after the trial, when a body considered to be a true *corpus luteum* was found in one of them; and some eminent authorities agreed that it indicated an advanced stage of pregnancy. (See Paris and Fonblanque, 'Med. Jur.' vol. 2, p. 179.) One medical witness appeared for the prisoner, and he contended that the state of the uterus did not justify the medical inference that there had been recent delivery. He assumed that the appearances might have been due to the expulsion of a group of 'hydatids.' If by the term 'hydatids' he intended the vesicular ovum, he admitted the fact of a conception, and therefore the motive would remain the same. If he intended the true hydatids, then their cyst would have been observable in the uterine wall, and the point of its bursting into the uterine cavity plainly distinguishable; for it is clear that true hydatids would not grow in the uterine cavity itself. The medical defence was for that date ingenious, but at the present time would, for the above reasons, be inadmissible. The contents of the uterus were not produced—a fact which left the case in mystery.

CONCEALMENT OF BIRTH.

CHAPTER 62.

CONCEALMENT OF THE BIRTH OF A CHILD—DEFINITION OF THE OFFENCE—WOMEN ACQUITTED OF INFANTICIDE FOUND GUILTY OF CONCEALMENT—MEDICAL EVIDENCE FROM THE REMAINS OF THE BODY—ANALYSIS OF BONES—THE CHILD MUST BE DEAD—CONCEALMENT OF THE OVUM OR EMBRYO—NOT NECESSARY TO PROVE WHEN THE CHILD DIED.

Concealment of birth.—Medical evidence respecting delivery is required in two cases: 1st, when the birth of a child is wilfully concealed; and 2ndly, when the contents of the uterus have been prematurely expelled by criminal means. The concealment of pregnancy is no offence in the English law; but the concealment of *delivery* or of *the birth* of a child is a misdemeanour by the 24 and 25 Vict. c. 100, sec. 60, the words of which are to the following effect:—'If any woman shall be delivered of a child, *every person* who shall by *any secret disposition* of the dead body of the said child, whether such child died before, at, or after its birth, endeavour to conceal the birth thereof, shall be guilty of a misdemeanour, and being convicted thereof shall be liable at the discretion of the Court to be imprisoned for any term not exceeding two years, with or without hard labour.' A proviso is added to the effect that any person tried for the murder of any child, and acquitted thereof, may be found guilty of concealment of birth, if it shall appear in evidence that the child had recently been born, and that such person did by some *secret disposition of the dead body* endeavour to conceal the birth.

Various interpretations have been put upon the terms 'concealment' or 'secret disposition' of the body. This part of the evidence does not affect a medical witness, unless he himself has found the dead body or was present when it was

found. It will rest with the judge to determine whether the body has been s disposed of as to constitute legally a misdemeanour. (*Reg.* v. *Clarke*, Chelms ford Summer Assizes, 1864.)

This is an offence of which women charged with child-murder have bee hitherto commonly convicted in England; while the Scotch law punishe women for the concealment of pregnancy if the child be dead or amissing (Alison's 'Criminal Law,' p. 153.) The medical evidence on trials for thi misdemeanour is exclusively derived from an examination of the mother; an thus, much will depend upon the time at which this is made. With respec to the child, its body need not even be produced, provided there be satisfactor evidence of its death: the body may have been secretly buried or burnt, an in the latter case it may be necessary to examine the ashes. (See. p. 161, vol. 1.

According to the statute the child must be *dead*—the concealment of th birth of a living child not being any offence, unless it should happen to di before its birth was made known. In the case of the *Queen* v. *Woodma* (Kingston Lent Ass. 1845), the woman was acquitted because the child wa living when concealed. Mr. Chitty says, that in order to constitute the offenc the child must have advanced to the end of the seventh month ('Med. Jur p. 412); but it is to be presumed that the concealment of the birth of dead child at the sixth or under the seventh month would be as much a infringement of the statute as if it were more advanced. The concealment o the aborted but undeveloped ovum or embryo—of a monster, *i.e.* a child with out human shape, a mole or other morbid growth—would not probably be con sidered a contravention of the statute. I am not aware that there has been an judicial decision on this point. Mr. Lane communicated to the 'Medic Times' (Aug. 1845) a case in which a charge of concealed birth was dismisse by the magistrates of Surrey, because the concealment referred to a child bor at the eighth month *in its membranes*. The woman stated that she did not con sider it to be a child! If this decision is correct, the main object of the sta tute (*i.e.* to prevent secret delivery, so often leading to murder) may be effec tually evaded. The case, being entirely new, should have been sent for tria and the decision left to the proper interpreters of the law; a magisterial dec sion can furnish no precedent on a question of this kind. This woman mu have been delivered of a child, fœtus, or embryo, or of course there woul have been no pretence for the charge. That a child may be thus born an removed from the membranes alive is a fact established by experience. D Brunton reported to the Obstetrical Society a case in which the entire ovu was expelled at the seventh month of gestation, and the child was rescued aliv although born fifteen minutes before being taken out of the membranes. ('Me Times and Gaz.' 1871, 1, 412). In another case of sudden delivery the chil in its membranes with the placenta were discharged into a bucket. It was n rescued in time to save life. (Amer. Jour. April 1870, p. 430.)

A singular case of alleged concealment of birth occurred at the Suffolk Le Assizes, 1853. A married woman was charged with having concealed th birth of her infant child. It appeared that her husband and the neighbou supposed she was pregnant. After the child was reported to have been bor it was alleged that it had died, and preparations were accordingly made for th burial. The coffin was examined, and was found to contain not the body of child but the figure of a doll. The learned judge directed the grand jury that be fore they could find a bill, charging the prisoner with the guilt of concealmen they must be satisfied (but of this there was no evidence on the depositions) th the woman had really been delivered of a *child*. The prisoner had been a ma ried woman for a number of years, and her conduct could only be account for on the supposition that she had endeavoured to impose upon her husba and her neighbours. The case fell to the ground.

It will be perceived that it is not material here, as it is in a case of alleged infanticide, to prove *when* the child died—whether before, during, or after its birth; and thus those subtleties, and technicalities which are met with in cases of child-murder are avoided. In regard to proof of concealment, and what constitutes it, these are essentially legal points; but a medical practitioner may sometimes benefit an accused person, if he can prove that the female had made application to him on the subject of her pregnancy and delivery. The law is especially lenient under such circumstances. A very strict interpretation appears to be put upon this term concealment. There must be a 'secret disposition' of the dead body. In a case tried before the Recorder, *Reg.* v. *Honeycombe* C. C. C. August, 1871), a woman indicted under the statute, was acquitted, because the evidence showed that the body of the infant was found on a rising ground in a field which was visible from a public highway. This was held not to be concealment. In another case, a girl, who was far advanced in pregnancy, went into a recess by the side of the road, and was there delivered. The body of a child was afterwards found there by a boy who was passing. This case was reserved as to whether this was such a secret disposition of the body as to constitute the legal offence of concealment of birth. Questions connected with concealment of birth do not fall under the jurisdiction of a coroner:—the medical evidence is therefore required by a magistrate. Medical witnesses were formerly exposed to much trouble and inconvenience in giving their evidence on these occasions (see 'Med. Gaz.' 19, 287); but the defect has been remedied by statute. (1 Vic. c. 44.)

In a case under the Scotch statute in reference to the concealment of pregnancy, for a report of which I am indebted to an eminent legal authority, this question arose, viz.—'Whether the charge was excluded if the woman, an unmarried female, proved that she had intimated that she was with child to the father, but denied the pregnancy to everyone else? That the object of the statute was defeated in such a case, and yet that the main fact on which the statutory offence is founded was proved, could not be doubted. Concealment, and not calling and making use of assistance in the birth, constitute the offence. The Court of Judiciary was nearly equally divided. The majority went on the bare terms of the statute: the minority held that concealment was here a general term to denote the denial to all near and around the woman, and from whom assistance might be obtained, and was coupled with not calling for assistance in the birth. As a letter written to Australia, if the father had gone there, could not be taken to exclude the statutory offence, and as the woman concealed her pregnancy and had obtained no assistance in the birth, an expression which shows what the character of the concealment referred to is, the communication of the fact of pregnancy to the father of an illegitimate child (often more anxious to get rid of the child than the mother) really could not lead to its preservation, and left the concealment which the statute referred to, equally complete. But the point was not actually decided, as it was thought that the terms of the special verdict did not raise the question, but, by an accidental form of expression, excluded it.'

It is not usual to find a married woman charged with this offence, but a man and his wife were convicted of concealing the birth of a child at the Lincoln Lent Assizes, 1872 (*Reg.* v. *Curtis and wife*). The woman was delivered of a still-born child early in the morning, and the husband buried the body in his garden, where it was afterwards found. Before the birth of the child the woman denied that she was pregnant, and after her delivery declared that she had not been aware of her pregnancy. The difficulty in the case was that no reasonable motive could be assigned for a husband and wife concealing the body of a dead child.

CRIMINAL ABORTION.

CHAPTER 63.

ABORTION FROM NATURAL CAUSES—ITS FREQUENCY—THE RESULT OF VIOLENCE AND ACCIDENT—CRIMINAL CAUSES—ABORTION BY MECHANICAL MEANS—FATAL RESULTS—MEDICINAL SUBSTANCES—DRUGS AND POISONS—EMMENAGOGUES AND ECBOLICS—RUE—PENNYROYAL—SAVIN—OIL OF SAVIN—TANSY—ASARABACCA.

By abortion is commonly understood, in medicine, the expulsion of the contents of the uterus *before the sixth month of gestation.* If the expulsion takes place between the sixth and ninth month, the woman is said to have a premature labour. The law makes no distinction of this kind, but the term abortion is applied to the expulsion of the fœtus at *any period of pregnancy* before the term of gestation is completed; and in this sense it is synonymous with the popular term *miscarriage.* Criminal abortion is rarely attempted before the third month; it is perhaps most common between the fourth and fifth month, because then a woman begins for the first time to acquire a certainty of her pregnancy. The causes of abortion may be either *natural* or *violent.* The latter only fall under the cognizance of the law; but a medical witness should be well acquainted with the causes which are called natural, in contradistinction to others which depend on the application of violence. These *natural* causes are so frequent, that—according to Mr. Whitehead's observation—of 2,000 pregnancies, one in seven terminated in abortion. These causes are commonly ascribable to peculiarities in the female system, to the presence of uterine or other diseases, or to some moral shock sustained by a woman during pregnancy. The natural causes are sometimes very obscure, the real cause being overlooked. (See paper by Dr. Charles Bell, Ed. 'Med. Jour.' Aug. 1865, p. 120.) All diseases which strongly affect the uterus or general system of the woman may give rise to abortion. An attack of smallpox has been known to produce it; and it has been suggested by Mr. Acton that the presence of constitutional syphilis in the father is not only a cause of infection in the offspring, but of repeated abortion in the female. ('Med. Gaz.' vol. 36, p. 164; Ramsbotham's 'Obstetric Medicine,' p. 655.) These facts deserve attention, when it is proved that a woman has really aborted, and an attempt is unjustly made to fix an alleged act of criminality on another. For further information on the numerous natural and accidental causes which may give rise to abortion, the reader may consult the work of Mr. Whitehead 'On Abortion and Sterility,' p. 252; also for the effects of undue lactation and diseases of the placenta, in causing abortion, see 'Med. Times and Gaz.' Dec. 4, 1852, p. 580, and March 19, 1853, p. 302.) In considering the operation of these causes, it is proper to bear in mind that during pregnancy the uterus is subject to a natural periodical excitement, corresponding to what would have been the menstrual periods dating from the last cessation. Hence comparatively trivial causes operating at these periods may lead to an expulsion of the fœtus. Dr. Salomon has reported two cases in which premature delivery followed the mercurialization of the system. (Casper's 'Wochenschrift,' June, 1845, and 'Med. Gaz.' vol. 36, p. 658.)

The *violent* causes of abortion may be of an accidental or criminal nature. In general, the distinction will not be difficult; the kind of violence and the

adequacy of the alleged cause to produce abortion, will be apparent from the evidence. In reference to criminal cases, the causes may be referred either, first, to the use of *mechanical* means, or secondly, of irritating *medicinal* substances which act upon the uterus or bowels. They operate with greater certainty just in proportion as the pregnancy is advanced.

MECHANICAL MEANS.

Among the mechanical causes may be mentioned—severe exercise, the violent agitation of the body, as by riding or driving over a rough pavement, in which case no marks of violence would be apparent. Any physical shock, sustained by the body, may operate indirectly on the uterus. Blows or violent pressure on the abdomen are sometimes resorted to; but in these cases the marks of violence will be commonly perceptible. Instruments have been devised for the purpose of piercing the membranes, destroying the child, and thereby leading to its expulsion. Devergie speaks of such instruments being well known in England, and of English midwives deriving a living from the practice of this crime. (Op. cit. vol. 1, p. 285.) Although this must be regarded as an exaggerated statement, it cannot be denied that cases have transpired which show that the crime is frequently perpetrated by irregular medical practitioners, who basely derive a profit from the practice; and for one case that comes to light probably a dozen are effectually concealed. In several instances the crime has been traced to a low class of German and French medical men, not on the English register, and probably not duly licensed in their respective countries. In the case of *Barker* (p. 197) a French doctor was charged with having caused the death of the woman by the use of instruments; and in *Reg.* v. *Stadtmühler* (Liverpool Winter Ass. 1858) a German doctor was charged with murder under similar circumstances. A healthy young woman, æt. 22, consulted the prisoner in reference to her pregnant state. He employed instruments for the purpose of procuring abortion. She died within forty-eight hours, and on inspection severe internal injuries were found, which quite accounted for her death. Before the inspection was made the prisoner signed a certificate of the cause of death as 'inflammation of the bowels.' He was convicted of murder. In *Reg.* v. *Vaughan* (Stafford Winter Assizes, 1872) a woman was convicted of using an instrument with intent to procure abortion. On the day following that on which the instrument was used, the prosecutrix was taken ill, and gave birth to a dead and immature child. The evidence showed that the prisoner had previously committed acts of a similar kind. Denman, J., sentenced her to fifteen years penal servitude.

Mechanical means are undoubtedly more effectual in producing abortion than medicinal substances; yet, from the fact of such attempts being made by ignorant persons, the woman generally dies from inflammation of the womb or peritoneum, or other serious after-consequences. A case was tried some years since, in which the evidence showed that the prisoner had attempted to produce abortion in the deceased by thrusting wooden skewers into the substance of the uterus. Inflammation and gangrene took place, and the woman died. The prisoner was convicted, and executed for murder. (For a similar case by Mr. M'Pherson, see 'Med. Gaz.' vol. 36, p. 102; see also another case in the same journal, vol. 45, p. 693.)

When the death of the woman takes place, as it commonly does, under these circumstances, the crime is considered to be murder, although the accused may not have intended to destroy life. The law was thus laid down by Bramwell, B., in *Stadtmühler's* case (*suprà*):—'If a man for an unlawful *purpose used a dangerous* instrument, or medicine, or other means, and thereby

death ensued, that was murder, although he might not have intended to cause death, although the person dead might have consented to the act which terminated in death, and although possibly he might very much regret the termination that had taken place contrary to his hopes and expectations. This was wilful murder. But the learned counsel for the defence had thrown on the judge the task of saying whether the case could be reduced to manslaughter. There was such a possibility, but to adopt it would be, he thought, to run counter to the evidence given. If the jury should be of opinion that the prisoner used the instrument not with any intention to destroy life, and that the instrument was not a dangerous one, although he used it for an unlawful purpose, that would reduce the crime to manslaughter. He really did not think they could come to any other conclusion than that the instrument was a dangerous one, if at all used. Then, if it were so used by the prisoner, the case was one of murder; and there was nothing for the case but a verdict either of murder or of acquittal.'

Any mechanical injury done to the uterus always implies interference of some other person in the perpetration of the crime. Mr. Richards, medical officer of Bancoorah, informs me that the professional abortionists of India, the native *dhaees*, who are women of the lowest castes, generally adopt this method of procuring abortion. They insert into the uterus a twig of a tree about six or eight inches long, smeared with assafœtida. The membranes are ruptured, abortion takes place, and the woman dies from peritonitis, the walls of the uterus being usually found perforated. It is a common practice in these cases to refer death to snake-bite, in order to prevent the inspection of the body! A post-mortem examination generally reveals this mode of procuring abortion.

It is obvious that mechanical means can seldom be applied to the uterus without leaving marks of violence on this organ as well as on the body of the child. If the woman should die an inspection will at once settle the point. ('Ann. d'Hyg.' 1834, 1, 191; 1838, 1, 425; 1839, 2, 109.) An important case of this kind was the subject of a criminal trial in Scotland in 1858 (case of *Reid*, 'Med. Gaz.' Dec. 11, 1858). The uterus near its mouth presented two openings in its substance, described as punctured wounds by the medical witnesses for the prosecution who made the examination, and as the openings of torn blood-vessels by others who were called for the defence. There was also a rupture of one ovary. The prisoner was convicted; but the medical man who was supposed to have been the principal agent in the crime committed suicide. The case is chiefly important in showing that any apparent mechanical injury to the uterus should be minutely examined at the time of inspection, so that no doubt of the cause may afterwards be entertained. If, in a case of this kind, the mother survive and the child be expelled, then marks of violence will be found on its body. These marks may not be sufficient to account for its death; but that is not here the question. If it can be proved that they have not resulted from accidental causes during gestation or subsequently to delivery, then their presence may furnish strong corroborative evidence of the actual means by which abortion was attempted. It is said that abortion has been in some instances accomplished by frequent bleeding from the arm. This effect may follow as a result of shock produced by the loss of a large quantity of blood. An examination of the veins of the arms would show whether any such attempt had been recently made.

There can be no doubt that of all the exciting causes of abortion, the most effectual, and that which most certainly brings on the expulsive action of the uterus, is the destruction of the ovum or embryo. If by accident or design the ovular membranes should become ruptured, gestation is arrested, and abortion necessarily ensues. At any period of pregnancy, therefore, a puncture through the membranes will sooner or later occasion the evacuation of the uterus.

(Ramsbotham's 'Obstetric Medicine,' p. 655.) This author remarks that the performance of the operation demands a most accurate knowledge of the anatomy of the ovum and the maternal structures, as well as of the state of development which the neck of the uterus assumes at different periods of pregnancy. In medical practice for the induction of premature labour, the membranes are ruptured either by the use of a female catheter, or by an instrument of this shape, but including a blade like a tonsil-lancet. Unless the inner membrane or amnion be opened, gestation may still proceed, and abortion will not take place. When the membranes are completely penetrated and the waters are discharged, uterine action is invariably induced, but the time which elapses from the performance of the operation to the commencement of labour is subject to great variation. Dr. Ramsbotham states that he has known the uterus begin to act in *ten hours* after the rupture, but in another case a week elapsed before its action commenced. As a general rule, uterine action is fully established in fifty or sixty hours. It must not be supposed, however, that where a criminal intention exists, so long a period is required for removing the contents of the uterus. The cases above referred to were cases of obstetric practice, in which there was no desire to expose the female to the slightest risk, and premature labour was openly induced. In a criminal attempt by a medical practitioner, in which the woman would be a consenting party to the act, the removal of the embryo or fœtus might be effected in a much shorter period of time. At any rate, the time for the completion of abortion could not be measured by cases in which the uterus has been left to undergo spontaneous contraction after the membranes had been punctured, and the waters had escaped. There would, however, be great danger to a woman in the necessary manipulations required. The reader will find reports, by M. Tardieu, of numerous cases of abortion as a result of mechanical means applied to the uterus, in the 'Annales d'Hygiéne,' 1855, 1, 406; and some good practical remarks by the same writer, on the mode in which these inquiries should be conducted, in the 'Annales d'Hygiéne,' 1856, 1, 141. On the mechanical means for procuring abortion and the results, see a paper by Dr. Lex (Horn's 'Vierteljahrs.' 1866, 1, 253.)

It is obvious that this mode of perpetrating abortion is only likely to succeed in the hands of persons who have a complete anatomical knowledge of the parts. The certain death of the woman will convert the crime into murder, when instruments are introduced into her body by persons who are ignorant of anatomy. It is to be regretted that members of the medical profession have on several occasions misused their professional knowledge, and have exposed themselves to prosecutions for this crime. Sometimes the charge has been raised falsely, for the purposes of extortion, or through misapprehension on the part of the woman; at others, the evidence has left it very clear that the charge was well-founded. Of late years medical men have rather freely used the speculum. When this instrument has been improperly or unnecessarily used on a pregnant woman, a charge of attempted abortion by instruments may be easily raised against a medical practitioner. A trial took place at the Exeter Lent Assizes, 1854 (*Reg.* v. *Griffin and Venn*), in which it was charged that the accused, Venn (a surgeon), had feloniously used an instrument with the intent to procure the miscarriage of the prosecutrix. According to the evidence, Venn had on several occasions passed a round polished instrument into the body of the woman, once in a coppice and at another time in a field. The defence was, that the surgeon had merely used a speculum to ascertain whether she was pregnant, in order to know how to prescribe for her; and that it was absurd to suppose that he had ever intended to procure abortion, for this had not followed, and it might have been easily produced by him at any period of pregnancy if he had wished it. The prisoners were acquitted. Ad-

mitting the statements of the prosecutrix and prisoner to be correct, it may be remarked that medical practitioners, in the lawful exercise of their profession, do not commonly use a speculum in open fields or coppices to determine whether a female is pregnant or not: and it is a well-known fact that a speculum is not required for determining the question of pregnancy at all. This case conveys a serious caution to members of the medical profession.

MEDICINAL SUBSTANCES.

Emmenagogues. Ecbolics.—These are more frequently resorted to for inducing criminal abortion than other means; but they rarely answer the intended purpose, and when abortion follows, it is generally at the expense of the life of the woman. Mineral poisons have been ignorantly employed for this nefarious object, and often with a fatal result. Among these substances may be mentioned arsenic, corrosive sublimate, the acid chromate of potash (Horn's 'Vierteljahrsschrift,' 1866, 2, 113), sulphate of copper, copperas or sulphate of iron, the muriated tincture of iron, and other irritants. Metallic *mercury*, which is generally reputed to be innocent, has been given for the purpose of procuring abortion. In a recent case, recorded by Sir D. Gibb ('Lancet,' March 8, 1873, p. 339), it produced no effect on the uterus, but caused some severe nervous symptoms, which would justify the application of the term 'noxious' to this substance.

A man administered to a girl, æt. 20, in the third month of pregnancy, about four ounces and a half of metallic mercury. It had no effect on the uterus, but in a few days, owing to oxidation and absorption of the metal, tremors began to affect the right side of her body. Her gait became unsteady, and she stumbled in walking. These symptoms continued unabated for two months, and then affected the left side. She lost the power of grasping things. She went the full time, and the symptoms had then almost disappeared. This, so far as I know, is the only instance in which mercury has been given for such a purpose. It is worthy of note that some of these powerful poisons may produce violent symptoms and destroy life, without in any way affecting the gravid uterus or its contents. In July 1845, I was consulted in the case of a woman, æt. 22, who had passed the fifth month of her pregnancy, and who had died, it was supposed, from the effects of arsenic. It appeared from the evidence that, with the view of producing abortion, she had been advised to take a large dose of arsenic. She suffered from severe vomiting and purging, and died in seven hours, without having aborted. A large quantity of arsenic was found in the stomach.

The muriated tincture of iron has frequently caused severe symptoms, and seriously injured health, without producing abortion. In a case in which my evidence was required at the Lincoln Summer Assizes, 1863 (*Reg.* v. *Rumble*), it was proved that this compound of iron had been given in large doses daily to a pregnant woman, for the purpose of exciting abortion. It had not had this effect, but it had seriously injured the health of the woman. The prisoner also gave to her cantharides in pills. The defence was, that these were proper medicines for the treatment of amenorrhœa, under which it was alleged she was labouring. The large doses administered, and the secrecy with which the medicines were supplied, proved that they had been given unlawfully, and with criminal intent; and the druggist who supplied them, knowing the purpose for which they were required, was convicted. Corrosive sublimate and other mercurial compounds may cause death, without in any way exciting the uterus to expel its contents.

Drugs, such as croton oil, elaterium, gamboge, and other drastic purgatives, have been used with criminal intent without causing abortion. Aloes and two

of its compounds, *hiera picra*, a mixture of aloes and canella bark, and *Pilacotia* (*pilulæ coccinæ*) sometimes called 'pill cochia,' a mixture of aloes and colocynth, are much used as purgatives among the poor. In large or repeated doses, they are supposed to have the power of exciting the uterus, and are secretly employed for the purpose of abortion. Although not poisons in the strict sense of the word, it may be observed of these drugs, and of all purgatives which cause much straining or specially affect the rectum, that they may readily bring on abortion in the advanced stages of pregnancy, while they fail in the earlier stages. For a notice of the specific action of some of these substances see vol. 1, pp. 321, 325.

The herbs which have acquired a popular repute as abortives in the form of powdered leaves, infusion or decoction, are very numerous. Some are innocent, such as pennyroyal, broom, and fern; others are pernicious, such as white and black hellebore, yew, and laburnum. A decoction of broom simply acts as a diuretic.

The medicinal substances above described, if they have any effect, exert an indirect action on the uterus by producing a shock to the general system. But there is another class of bodies which are considered to act on the uterus directly. These are classed under the names of *emmenagogues* and *ecbolics*. As in certain trials for criminal abortion some confusion has arisen in the application of these terms (see *Reg.* v. *Wallis*, *infra*), it will be necessary to state here what is understood by them. *Emmenagogues* (from ἐμμήνια, the menstrual discharge, and ἀγωγὸς, exciting) signify those medicines which excite or promote the menses. The late Dr. Pereira enumerates among these savin, black hellebore, aloes, gamboge, rue, madder, stinking goosefoot (*chenopodium olidum*) gin and borax, and for the most part substances which when taken in large doses act as drastic purgatives or stimulating diuretics. When amenorrhœa co-exists with anæmia the most effectual emmenagogues are chalybeates, the preparations of iron, including Griffith's mixture. ('Elements of Materia Medica,' by Taylor and Rees, 4th edit. vol. 1, p. 270.) *Ecbolics* (from ἐκβόλιον, a medicine which causes abortion or the expulsion of the fœtus) imply medicines which operate directly as *abortives*. They excite uterine contractions and thereby promote the expulsion of the contents of the uterus.

Dr. Pereira (Op. cit. p. 271) justly observes that 'ecbolics are essentially distinguished from emmenagogues by this circumstance, that while the latter stimulate the vascular system (blood-circulation) of the uterus, the former excite the uterine muscular fibres to contraction. Ecbolics, therefore, are truly abortives, they promote the expulsion of substances contained in the uterine cavity: such as the fœtus, the placenta, hydatids, clots of blood, &c. The number of ecbolics known is very small. Indeed, the only known unequivocal agent of this kind is *ergot*. The ergot in ordinary use is that of rye; but the ergot of wheat is said to be equally effectual, and the same perhaps may be stated of the ergot of all grasses. Borax is also said to act as an ecbolic.'

In addition to these there are other substances derived from the vegetable, animal, and mineral kingdoms, which have been employed for procuring abortion, and on the specific effects of these agents when administered to pregnant women, medical opinions may be required. Such are yew leaves, grains of paradise, tansy, hellebore (white and black), squills, pennyroyal, cantharides, sulphate of potash, and iron-filings. The substances vary with the locality. Mr. Richards informs me that the native Indian abortionists employ the following drugs: camphor, the juice of the jeata, the mulberry, and seajeena-root, as well as pan root, a species of pepper. These act chiefly as irritants upon the system, although they are supposed to have a specific effect on the uterus as ecbolics. The English herbs on which medical opinions may be required are *chiefly rue*, pennyroyal, savin, and tansy.

Rue (*Ruta graveolens*). This common garden plant has been much used in the form of decoction. M. Tardieu has reported three cases in which a strong decoction of rue produced abortion at the fourth, fifth, and about the sixth month of pregnancy respectively, and the women recovered. ('Ann. d'Hyg.' 1855, 1, 403.) Among the symptoms caused by rue when taken for the purposes of abortion are profuse salivation and great swelling of the tongue. Abortion has slowly taken place after five or six days. There has been no inflammation of the uterus, but the woman has not recovered from the effects for a long time. (Horn's 'Vierteljahrs.' 1866, 1, 233.) Rue acts most powerfully when taken in the fresh state. The active principle appears to be a volatile oil, which gives the remarkable odour to the plant. The oil is most abundant in the seeds. The crystalline body called *rutine* or *rutinic acid*, has no physiological properties. In the event of the leaves being taken, the best evidence will be furnished by their botanical characters.

Pennyroyal (*Mentha Pulegium*). This is a variety of mint. It was formerly used in medicine in infusion under the name of pennyroyal water. It is now excluded from the Pharmacopœia as inert and useless. Its properties are owing to an essential oil which may be distilled from the leaves. The odour of the oil as well as of the leaves closely resembles that of peppermint. The oil mixed with nine parts of spirit forms the Spiritus Pulegii or essence of pennyroyal. The infusion, under the name of pennyroyal tea or pennyroyal water, is used as a popular remedy for obstructed menstruation, and it has also been used for the purpose of abortion; but it has neither emmenagogue nor ecbolic properties, and is not now employed for any purpose by medical practitioners. It is a warm stomachic, like the other mints, and its place in pharmacy is now supplied by peppermint water.

Any notice of this substance here would have been quite unnecessary, but for the fact that in a recent trial for criminal abortion (*Reg.* v. *Wallis*, 1871). strongly abortive properties were incorrectly assigned to it; and it was described as a highly noxious substance. Pennyroyal infusion or tea has no more effect than peppermint, spearmint, or camphor water: and with regard to the essential oil, of which the fresh herb contains about one per cent., Dr. Pereira describes it as stimulant, antispasmodic, and emmenagogue, in doses of from two drops to five drops taken on sugar. ('Materia Medica,' vol. 2, pt. 1, p. 514.) No author assigns to it ecbolic properties, and this is really the point for inquiry in a case of alleged criminal abortion. A medical witness at the trial above referred to, stated that pennyroyal would produce abortion, but admitted in cross-examination that he had no practical knowledge of its properties, and unless taken for some time and of considerable strength, it would have no effect at all!

This witness appears to have based his opinion of the abortive properties of pennyroyal on the following case, noticed in Beck's 'Medical Jurisprudence.' At the Chelmsford Assizes in 1820, a man is reported to have been convicted of administering steel-filings and pennyroyal water with intent to procure abortion, but it did not appear that abortion was produced or that the pennyroyal water had any noxious effects. The prisoner was convicted under the direction of the judge (Baron Wood) that if the intent in administering was to procure abortion, although the drugs might be incapable of producing such an effect, still he would be guilty, under the statute. The degree of reliance to be placed on this case as proving the ecbolic properties of pennyroyal may be judged of by the following case also cited by Beck: 'Dr. Watkins relates a case in which the mere *odour* of it (pennyroyal) produced abortion in a delicate woman at the fourth month.' (Beck's 'Med. Jur.' 1, 434.) Dr. Beck gives no support to this theory. He merely states of pennyroyal that

it is reputed by some to be a powerful abortive, and then quotes a note of the Chelmsford case from Paris and Fonblanque. ('Med. Jur.' vol. 3, p. 88.)

Medical witnesses should be more careful in giving evidence on these occasions in reference to the properties of drugs. They have to consider seriously in all cases of alleged criminal abortion by drugs, whether the substance is noxious—whether it is an emmenagogue or really an ecbolic. They should base their opinions either on actual personal experience or on the authority of those who have really studied the effects of the drugs, otherwise counsel may be greatly misled in placing the facts before the Court. Thus, in the case of *Reg.* v. *Wallis*, the learned counsel for the prosecution stated that he should show by the opinions of good medical witnesses, whose evidence on this point was remarkably strong, that pennyroyal was a well known herb and 'one calculated and well known to be calculated to procure abortion!' The first edition of this work was misquoted in order to support this incorrect view, whereas all that was there stated respecting pennyroyal, was that it was one of those substances which had acquired 'popular repute' for procuring abortion. ('Principles and Practice of Med. Jur.,' p. 782.) It was not described as an emmenagogue or ecbolic or as a substance having any abortive or noxious properties.

The case which has given rise to these remarks is of some interest in a medico-legal point of view, *Reg.* v. *Wallis*. (Winchester Autumn Assizes, 1871.) A solicitor was charged with administering, or causing to be administered, to a lady pregnant by him, certain noxious drugs, namely, the infusion of pennyroyal and a quantity of 'Griffiths's mixture,' with intent to procure abortion. The evidence showed that the prisoner had procured from a druggist the two substances mentioned, and had handed them to the lady. She subsequently had a miscarriage, and the prisoner was present soon after the delivery, but the body of the child was not forthcoming. The lady had reached the sixth month of her pregnancy, and prior to the miscarriage, there were no urgent symptoms of vomiting, purging, or pain, such as irritant substances, given for the purpose of exciting abortion, commonly produce. She soon recovered without any bad symptom. There was nothing to show that mechanical violence had been used or drugs of a powerful kind, taken by her. She had been in the habit of taking horse-exercise up to almost the date of the miscarriage; and it was alleged for the defence that at this time she had met with an accident or had sustained a shock while riding, which might account for the premature confinement.

It was proved that the prisoner had procured the leaves of pennyroyal, and also a bottle of a compound of iron and myrrh called Griffiths's mixture, assigning an untrue reason for procuring them, and had handed them to the lady. The medical evidence at the trial chiefly turned upon the question whether pennyroyal and Griffiths' mixture were such substances as would produce abortion. Some medical witnesses called for the prosecution deposed that they would; others, including Drs. Hicks, Barnes, and Tyler Smith, said that they would not act on the uterus to expel the contents.

The jury acquitted the prisoner of the charge of administering the drugs. The remarkable part of this case is the conflict of medical opinion on the properties of such substances as pennyroyal and Griffiths' mixture. With regard to this mixture there is no instance recorded of its having had any effect on the uterus of a pregnant woman as an abortive; and there is nothing in it which could lead to such a result. Griffith's mixture has been long used in medicine as a chalybeate tonic. It is a saccharine carbonate of iron, having no action on the uterus as an ecbolic, although often given to women not pregnant as an emmenagogue. A small dose would do no injury, but a large dose might cause nausea and vomiting. In this case the prosecutrix was called as a witness, and she stated that Griffith's mixture had been procured for her by

the prisoner at her request. She had copied the formula from a medicinal book. She had taken only two doses of it, but had taken none of the pennyroyal which had been provided in the state of leaves.

The counsel for the prosecution stated that the iron and myrrh contained in Griffiths's mixture were 'clearly abortive in their character;' and that the pennyroyal infusion was 'sufficient to procure abortion.' The medical evidence adduced to support this statement broke down on cross-examination, and was directly contradicted by the evidence of three experienced accoucheurs—Drs. Hicks, Tyler Smith, and R. Barnes. They all agreed that Griffiths's mixture was a good iron tonic, that it was not an abortive, and in the small quantity taken by the prosecutrix could have had no effect in causing abortion in this case. They also stated that pennyroyal was not a noxious substance, and although classed by some writers as an emmenagogue, and probably used for the purpose by ignorant women, it had no effect in producing abortion. Some confusion appears to have arisen in this case respecting the meaning of the term emmenagogue. It was evidently treated by some of the witnesses as synonymous with echolic or abortive, whereas its signification is widely different (*supra* p. 184).

Savin (*Juniperus Sabina*) *Oil of Savin.*—The properties of this substance as a vegetable irritant poison have been elsewhere described (vol. 1, p. 326). Writers on Materia Medica ascribe to it emmenagogue properties, *i.e.* that it is an excitant to the blood-vessels of the uterus, and is useful in certain cases of disordered menstruation. Pereira places it among the emmenagogues ('Mat. Med.' vol. 1, p. 271, and vol. 2, pt. 1, p. 332), but does not assign to it any echolic properties. It does not excite uterine contractions like the ergot of rye, and is not used for the purpose of aiding parturition. It would not be given to a woman in the pregnant state, for its operation as an irritant might affect the uterus indirectly and lead to abortion. It has been long known and employed as a popular abortive, the tops being used in the form of infusion or decoction. Under these circumstances it commonly acts as an irritant poison, causing severe pain, with vomiting and purging. The woman may die undelivered, or the fœtus may be expelled dead, and the woman afterwards die from the irritant effects produced on the stomach and bowels.

The fatal irritant action of savin will be evident from the following case, in which I was consulted in May 1845. The deceased, a healthy woman, had reached about the seventh month of pregnancy. She was very well on the Friday, but was seized with vomiting on the Saturday: she stated that she had taken nothing to produce it. The vomiting continued throughout Sunday, and was of a green colour. She was first seen by a medical man on Sunday evening. The symptoms were those of inflammation of the stomach and bowels, with great anxiety, and pulse 150. The green colour of the vomited matter was at first supposed to be owing to bile. The vomiting appears to have continued at intervals, but it does not seem that there was any violent purging. Labour came on on Wednesday. The child was born living, but soon died; The female died on the Thursday, *i.e.* five days after having taken the poison, for there was no proof that any savin could have been taken after Saturday. On inspection, the brain was healthy, the lungs were healthy, except that the air-tubes had a dark red colour, the heart was flabby: the blood was generally fluid. The lining membrane of the gullet was reddened, and had on it ecchymosed patches. One half of the mucous membrane, from the cardiac orifice upwards, presented a dark red arborescent injection, with slight patches of ecchymosis; there was no erosion or ulceration. In the stomach a large patch of redness, about three inches in length, extended from the greater curvature towards the pylorus. The vessels of the mucous membrane were considerably injected, forming infiltrated patches, especially about the lesser cur-

vature extending towards the cardiac end; but there was no ulceration or erosion. The stomach contained nearly eight ounces of a greenish fluid, of the appearance and consistency of green-pea soup. By examining a portion of the washed vegetable substance under a microscope, and by drying a portion, rubbing it, and observing the odour, clear evidence was obtained that the green colour was owing to the diffusion of finely triturated savin-powder. (See Fig. 34, vol. 1, p. 326.) The interior of the duodenum, especially towards the pylorus, was intensely inflamed, being of the colour of cinnabar. Patches of inflammation were found throughout the other portions of the intestines. There was some inflammation of the peritoneum, chiefly of the upper part of the intestines and omentum. The kidneys were inflamed, and of a dark red colour —the bladder was healthy. Green-coloured mucous matter, containing savin, was found in the duodenum, but not in the lower part of the intestines. ('Med. Gaz.' 36, p. 646.) The quantity of poison taken by the deceased could not be ascertained, but it must have been large. I estimated the quantity remaining in the stomach after five days, under frequent vomiting, at from twenty-five to thirty grains.

In a case which occurred to Mr. Newth, the patient, a pregnant female, eight hours after she had taken savin, was found lying on her back perfectly insensible, and breathing stertorously. She had been suddenly seized with vomiting, and this continued for some time. At first the case was thought to be one of puerperal convulsions. Labour came on, and she died in about four hours, during a fit of pain. She appeared to be between the seventh and eighth month of pregnancy, and the child was born dead. On inspection, twenty-four hours after death, the brain was found gorged with black fluid blood. The stomach was paler than usual, excepting in one or two spots, which were red, as if blood had been effused into the mucous tissue. It contained four ounces of an acid liquid of a brownish-green colour. This, on distillation, yielded an opaque liquid, from which a few drops of a yellow oil were separated by means of ether. Some sediment found in a bottle presented, under the microscope, the characters of powdered savin. ('Lancet,' June 14, 1845, p. 677.) There can be no doubt that this was the cause of death. The action of the poison appears to have been, in the first instance, like that of an irritant, and just before death like that of a narcotic.

The symptoms are not always those of an irritant. In some exceptional instances, as in the subjoined case, which occurred to Dr. Tidy, the action of the poison was spent on the nervous system. A young woman, advanced to the eighth month of pregnancy, secretly took this substance for an abortive. A medical man who was called to see her, found her with the teeth tightly clenched, and unable to swallow. There were tetanic convulsions, and the body was slightly arched forwards. She died, as it was at first supposed, from strychnia; but on examining the contents of the stomach, as well as a bottle containing a mixture, part of which she had taken before death, Dr. Tidy found a large quantity of savin, from the effects of which there was no doubt she had died. There was no strychnia. ('Lancet,' 1872, 2, 41.) It will be seen, therefore, that under a fatal dose of this drug, sufficient to act as a special poison, a woman even advanced so far as the eighth month of pregnancy may die without any effect being produced on the uterus.

The powdered leaves are the form in which savin is usually given as a popular abortive, and the above cases show the dangerous effects to the woman and child. The leaves of savin are readily obtainable in gardens. They may be given in the form of infusion or decoction. The former is the most powerful. Savin may also be given as a tincture, or as an essential oil. In all these forms, in large or frequently repeated doses, it has an irritant action. The *powdered* leaves are not used in medical practice. The dose as an emmenagogue

would be from five to fifteen grains—the medicinal dose of the oil is from two to six minims, and of the tincture (*Tinctura Sabinæ*, B.P.) is from twenty minims to one fluid drachm. This holds the oil and resin dissolved. The leaves of savin may be identified by their peculiar odour when rubbed, and also by their appearance under the microscope. (See vol. 1, p. 326.)

Cases in which the oil of savin has been administered for the purpose of abortion are not very common. In *Reg.* v. *Pascoe* (Cornwall Lent Assizes, 1852) a medical man was convicted and sentenced to transportation for administering oil of savin to a woman with intent to procure miscarriage. The proof of intent rested partly on medical and partly on moral circumstances. It appeared that the prisoner had given fourteen drops of the oil, divided into three doses, daily—a quantitity which, according to the medical evidence at the trial, was greater than should have been prescribed for any lawful purpose. The medicinal dose, as an emmenagogue, on the authority of Christison, is from two to five *minims*, and according to Pereira from two to six *drops*. The quantity given by the prisoner, although a full dose, was not, therefore, greater than these authorities recommend; and his criminality appears to have rested not so much on the dose given, as on the question whether he knew or, as a medical man, had reason to *suspect* that the female for whom he prescribed it was pregnant. No medical authority would recommend oil of savin in full doses for *pregnant* women; and with regard to the existence or nonexistence of pregnancy in a special case, medical men are reasonably presumed to have better means of satisfying themselves than nonprofessional persons. The prisoner's innocence, therefore, rested on the presumption that he implicitly believed what the prosecutrix told him regarding her condition,—that he had no reason to *suspect* her pregnancy, and therefore did not hesitate to select and prescribe a medicine which certainly has an evil reputation, and is rarely used by regular practitioners. According to the evidence of the prosecutrix, she informed the prisoner that she had disease of the heart and liver, and that nothing more was the matter with her. It is absurd to suppose that oil of savin would be prescribed by a medical man for such a disease as this. The prisoner, on the hypothesis of innocence, must have intended the medicine to act on the uterus, and must have inferred the existence of an obstruction of menstruation from natural causes irrespective of pregnancy. The jury do not appear to have given him credit for such ignorance of his profession, and this probably led to his conviction. There can, it appears to me, be no doubt that the oil was administered with a guilty intention. Every qualified practitioner, acting *bonâ fide*, would undoubtedly satisfy himself that a young woman whose menses were obstructed was *not pregnant*, before he prescribed full doses of this oil three times a day, or he would fairly lay himself open to a suspicion of criminality. If pregnancy, a frequent cause of obstructed menstruation—were only *suspected*, this would be sufficient to deter a practitioner of common prudence from prescribing, in any dose, a drug which may exert a serious action on the uterine system. (A report of the case of Mr. Pascoe will be found in the 'Med. Times and Gazette,' April 17, 1852, p. 104.) On the Northern Circuit, December 1853 (*Reg.* v. *Moore*), a man was tried and convicted of administering oil of savin to a pregnant woman. It made her very ill, but did not produce abortion.

The *oil of savin* is obtained by the distillation of the tops in the proportion of about 3 per cent. by weight. It has a yellowish colour, and the peculiar terebinthinate odour of the plant, by which alone it may be recognized. It may be separated from the contents of the stomach by agitating them in a bottle with its volume of ether, in which the oil is very soluble. The ether may be afterwards removed by distillation. The odour of the oil is stated to have been perceived in the blood and in the cavities of the body. This may be regarded as the

best test of its presence. (See a paper by Dr. Lex Horn's 'Vierteljahrsschrift,' 1866, 1, 241.) The oil of savin forms a turbid mixture with alcohol (·826). When treated with its volume of sulphuric acid, it acquires a dark brown colour, and when this mixture is added to distilled water, a dense white precipitate is separated.

Tanacetum vulgare. Oil of tansy. Tansy.—Dr. Hartshorne, an American physician, states that in the United States the *oil of tansy* has acquired the character of a popular abortive, and has caused death in several instances. In England this oil and the herb have been chiefly employed for the purpose of expelling worms. Dr. Pereira quotes a case in which half an ounce of the oil proved fatal. The symptoms were spasms, with convulsive movements and impeded respiration; no inflammation of the stomach or bowels was discovered upon dissection. ('Mat. Med.' vol. 2, pt. 2, p. 26.) The cases referred to by Dr. Hartshorne are—1. A teaspoonful of the volatile oil was taken by a girl in mistake for the essence. She complained of giddiness, and became insensible in ten minutes: convulsions came on, with frothing at the mouth, difficult respiration, and irregular pulse, and she died in one hour after taking the oil. ('Amer. Jour. Med. Sci.' July, 1852, p. 279.) 2. The second case occurred to Dr. Dalton, and is reported by him in the same journal for January 1852, p. 136. A healthy looking girl, æt. 21, took eleven drachms of oil of tansy about six hours after a hearty dinner. She was found insensible and in convulsions soon after she had taken the drug. She died in three hours and a half. A strong odour of tansy was observed in the breath before death, and on inspection in the peritoneal cavity, stomach, and even the interior of the heart. The uterus contained a well-formed fœtus about four months old, which did not, either in itself or its membranes, present any evidence of having been disturbed. 3. In a third case (reported in 'Amer. Jour. Med. Sci.' for May 1835) a woman but a few weeks pregnant, took half an ounce of the oil, and did not entirely lose her consciousness until three-quarters of an hour had elapsed, although she was convulsed at intervals before that time. She died without abortion being produced, within two hours after taking the poison. (For another case see 'Med. Times and Gazette,' April 13, 1861.) These facts show, that while oil of tansy possesses no specific action on the uterus as an abortive, and does not even affect this organ or its contents by sympathy, it is capable of acting as a powerful poison on the brain and nervous system, and of destroying life rapidly. The oil would be easily recognized, either before or after distillation of the contents of the stomach, by its peculiar and penetrating odour. It is very soluble in ether, and this may be employed for its separation.

Saffron, a decoction of the dried stigmas of saffron (*Crocus sativus*) has been employed as a popular abortive. Dr. Thomsen of Schleswig has reported a case in which abortion occurred in a woman who had taken repeated doses of a decoction of saffron with starch. There was reason to believe, however, that manipulations *per vaginam* had also been resorted to, and these may have had the principal share in bringing about the result. (Horn's 'Vierteljahrsschrift,' October, 1864, p. 315.) According to Pereira, although saffron was formerly used as an emmenagogue and to promote uterine contractions, it is not established by any trustworthy observations that it possesses any medicinal properties. ('Mat. Med.' vol 2, pt. 1, p. 219.) In modern medicine its chief use is to give colour and flavour to liquids. It has been observed, that when administered to pregnant women, the yellow colouring-matter has been absorbed, and the fœtus in utero has been stained with it. This appearance in the body of the fœtus might lead to a suspicion of its use, although no injury to the woman may have resulted.

In addition to these substances various medicinal preparations not known *to have any* action on the impregnated uterus have been employed as abortives.

Asarum Europæum. Asarabacca.—The powdered leaves of this plant were formerly used in medicine. The leaves as well as the root are irritant and acrid, owing to the presence of an essential oil. They have an aromatic and bitter taste. In doses of from half a drachm to a drachm these preparations excite vomiting, purging, and griping pains. Like other acrid or irritant substances, they may lead indirectly to abortion by their effects on the general system, but they have no specific action on the uterus. Dr. Maschka of Prague met with the following case, in which a decoction of the leaves, taken by a pregnant woman, was followed by death without causing abortion:—

A woman who had reached the fourth month of her pregnancy was advised to take a decoction of asarum for the purpose of exciting abortion. Pains in the abdomen were followed by convulsions, which proved fatal on the second day. The coats of the stomach and duodenum were found softened and reddened. The stomach contained a pasty-looking substance, without any appearance of leaves, roots, or seeds. The kidneys were much diseased, and in the uterus there was a fœtus of about four months. The contents of the stomach were examined chemically, but nothing was found to throw a light on the cause of death. The fact that she had taken a decoction of asarum was rendered probable by the evidence of witnesses; but it had not produced the usual effects of vomiting and purging. Dr. Maschka ascribed death to a diseased condition of the kidneys, leading to uræmic poisoning of the blood. This had, in his opinion, caused *eclampsia gravidarum* and death. (Horn's 'Vierteljahrsschrift,' 1865, 1, 54.)

In April, 1856, a medical man was convicted at the Central Criminal Court of Sydney of administering *extract of belladonna* as a suppository, in order to excite abortion. In a case which occurred in France *iodide of potassium* was pronounced by three medical men to be an abortive ('Med. Times and Gazette,' January 29, 1859), but the reasons for this opinion are not given. None of these substances have any influence on the uterus, except in affecting it indirectly by their irritant action on the system. For the action of *sulphate of potash* on pregnant women, see vol. 1, p. 239.

CHAPTER 64.

SPECIFIC ABORTIVES—ERGOT OF RYE—ITS PHYSIOLOGICAL AND CHEMICAL CHARACTERS—LOCAL APPLICATIONS—ABORTION FROM INJECTIONS—SIGNS OF ABORTION IN THE LIVING AND DEAD BODY—PERITONITIS—FEIGNED ABORTION—LEGAL RELATIONS—WHAT ARE NOXIOUS SUBSTANCES?—INDUCING PREMATURE LABOUR—ABORTION OF MONSTERS, MOLES, AND HYDATIDS—EXTRA-UTERINE FŒTATION—TESTS FOR BLOOD AND AMNIOTIC LIQUID IN CASES OF ABORTION.

Specific Abortives. Ecbolics. Ergot of Rye. Spurred Rye (*Secale cornutum.*—The substance called *Ergot* is a diseased growth on the grain or seed of rye, caused by a parasitic fungus. In powder, infusion, or tincture, it has been for some time used by medical practitioners to excite the action of the uterus and aid parturition. It is also used for a similar purpose on animals in veterinary practice. The properties of ergot as an abortive are but little known to the vulgar in this country, and this may account for the fact of our rarely hearing of cases in which it has been criminally administered by midwives to pregnant women. A trial which took place at the Central Criminal Court in July 1871 shows however that 'herbalists' and 'spiritualists' are well acquainted with the properties of ergot as an abortive, and are ready to supply it in secrecy (*Reg.* v. *De Baddeley and wife*). The prisoners in this case were in-

dicted for unlawfully supplying a certain noxious drug—namely, ergot of rye, knowing that it was intended to procure abortion. They lived at Kennington, and an advertisement was inserted in a certain spiritualist journal inviting people to consult at that house 'Madame De Baddeley, the celebrated clairvoyante.' From what was alleged to be transacted there, the police were induced to send a woman named Hansard to consult the prisoners, and to concoct a story which might elicit their 'spiritual' mode of procedure. After being put into a state of so-called 'clairvoyance' the female prisoner advised the applicant what to do in the case of a young woman whom she had mentioned, and gave her a quantity of ergot of rye to procure abortion. In all, 6*l.* was paid to the prisoners. The drug was at once handed over to the police. They were found guilty, and sentenced to twelve months' imprisonment.

The ergot of rye has been found to bring on contractions of the uterus at an advanced stage of gestation, or when efforts at parturition had already commenced. There is, however, some difference of opinion respecting its specific ecbolic properties. According to Dr. Lee it has no effect in the *early* stages of gestation, although given in large doses. ('Med. Gaz.' vol. 25, p. 10; see also 'Edin. Med. and Surg. Jour.' vol. 53, p. 27.) Dr. Kluge, of Berlin, found that its properties varied according to whether it was gathered before or after harvest; in the former case it had an energetic action, while in the latter it was powerless. Dr. Beatty states that when used in obstetric practice it is liable, by absorption into the system of the mother, which may take place within two hours, to endanger the life of the child. ('Dub. Med. Jour.' May 1844, p. 202.) This question was actually referred by the French Government to the Academy of Medicine in 1845, as there was reason to think that, under its employment in the practice of midwifery, children were frequently born dead. ('Ann. d'Hyg.' 1846, 1, 204; see also 'Med. Gaz.' vol. 46, p. 680.) In confirmation of Dr. Beatty's statement, Drs. M'Clintock and Hardy report, that, out of thirty cases in which it was administered, twenty children were born dead. ('Practical Observations,' p. 95.) The late Dr. Ramsbotham considered that the drug might operate fatally on a child according to the circumstances under which it was administered; but that, unless it excited the expulsive action of the uterus, it had no effect on the child's system. (Op. cit. p. 319; also cases by Mr. Paterson, 'Edin. Med. and Surg. Jour.' vol. 53, p. 142.) According to M. Millet, in commenced or imminent abortion, ergot procures a safe and prompt termination; and he never met with a case in which it injured the child. ('Med. Chir. Rev.' July 1855, p. 41.) This is also the result of the more recent experience of Dr. Uvedale West, contained in a paper read before the Obstetrical Society (July 1861). Between December 1855 and June 1861 he had attended 734 labours, in 172 of which ergot was given. Including one case of twins, 173 children were born under the effects of ergot, of which number only five were still born. These facts appear to show that ergot, as a rule, does not exert the noxious effects on the child which have been attributed to it by some obstetric writers.

On trials for criminal abortion, perpetrated or attempted, a medical witness must be prepared for a close examination on the ecbolic properties of the ergot of rye on the uterus, as well as its general action as a poison on the woman and child. A case, which occurred a few years since (*Reg.* v. *Calder*, Exeter Lent Assizes, 1844), has been reported, with comments on this subject by Dr. Shapter. ('Prov. Med. Jour.' April 10, 1844.) It was alleged on this occasion that savin, cantharides, and ergot had been respectively given by the prisoner, a medical man, for the purpose of procuring miscarriage. The prosecutrix, on whose evidence the case rested, was a woman of notoriously bad character, and the prisoner was acquitted. There were three medical witnesses, who agreed that savin and cantharides were only likely to occasion

abortion indirectly, *i.e.* by powerfully affecting the system—the view commonly entertained by professional men. Some difference of opinion existed with regard to *ergot*. Dr. Shapter stated, in his evidence, that he did not think the ergot would act unless the natural action of the uterus had already commenced—a statement supported by a number of authorities. Subsequently to the trial he collected the observations of many obstetric writers, and so far modified his opinion as to admit that the ergot might *occasionally* exert a specific action on the uterus, in cases of advanced pregnancy, even when uterine action had *not* already commenced. His summary on this subject is one of the best which has been published. Dr. Ramsbotham has reported three cases, from which it would appear that the ergot may in some instances exert a direct action on the impregnated and quiescent uterus. In these instances the females were in or about the *eighth* month of pregnancy. ('Med. Gaz.' vol. 14, p. 434.) This observation has been fully confirmed by further experience on the use of the drug. ('Med. Times and Gaz.' Jan. 7, 1854, p. 8; see also his 'Obstetric Med. and Surg.' p. 198.) Dr. J. H. Davis believes that it is a specific excitant of uterine action, and points out the cases in which, in his opinion, it may be safely employed. ('Lancet,' Oct. 11, 1845, p. 393.) In a case in which, owing to distortion of the pelvis, it was necessary to bring on labour six weeks before the full period, Mr. Raynes found that ergot in the form of infusion in repeated doses excited the action of the uterus, and delivery was accomplished within fifty-eight hours of the taking of the first dose. The uterus was in a quiescent state before the medicine was given to the patient. ('Med. Times and Gaz.' March 14, 1857, p. 260.) Mr. Whitehead, who has had considerable experience on the subject, has found that its action is very uncertain. In a case under his care, that of a woman with deformed pelvis, it was considered advisable to procure abortion in the fifth month of pregnancy; the ergot alone was employed, and at first with the desired effect. It was given in three successive pregnancies, and in each instance labour-pains came on after eight or ten doses had been administered, and expulsion was effected by the end of the third day. It was perseveringly tried in a fourth pregnancy in the same woman, and failed completely. ('On Abortion,' p. 254.) It also failed in a case in the hands of Dr. Oldham. ('Med. Gaz.' vol. 44, p. 49.) Nevertheless, the balance of evidence is decidedly in favour of its specific action as a direct uterine excitant; and, according to Dr. Griffiths, this is so well known to the inhabitants of the United States, that it is there in frequent use as a popular abortive, and another substance not known in England is now used with it, namely the extract of cotton-wood. Perhaps the differences which have been observed in the action of the ergot of rye may have depended on the quality of the drug, as well as on the period at which it was administered. Admitting that the uterus is subject to periodical excitement, corresponding to the menstrual periods, it is probable that the action of ergot may be more powerfully abortive at these than at other times. In a case in which I was consulted in 1860, an attempt had been made to administer secretly the ethereal tincture of ergot.

A case occurred at Brighton, in October 1864, in which a question arose respecting the fatal effects of this drug on a woman who had taken it for a long period, obviously with a view to procure abortion. She died, however, without abortion having taken place; and the question at issue was, whether this drug had or had not caused her death. The dose taken was, I am informed, about a teaspoonful of the tincture of ergot three times a day, for a period of eleven weeks. On inspection, patches of inflammation were found on the mucous membrane of the stomach after death. No other cause for death was apparent, and one medical witness assigned it to the poisonous irritant action of the ergot, as, at the early stage of pregnancy which she had reached (the third

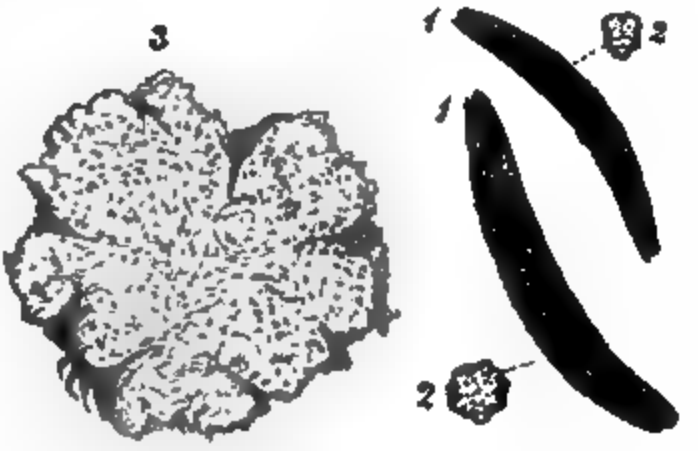
month), this substance would not be likely to act as an abortive. Another medical gentleman who gave evidence at the inquest, asserted that death could never be primarily caused by ergot of rye. The qualification introduced into this medical opinion is of small importance. The deceased woman is reported to have taken a large portion of the tincture, and it is immaterial whether the drug killed her by a primary or secondary operation. M. Tardieu describes the case of a woman, æt. 24, who aborted in the fourth month of pregnancy, as a result of the administration of ergot in powder; she died from peritonitis in about twenty-four hours. The ergot was found in fragments in the lower third of the bowels. ('Ann. d'Hyg.' 1855, vol. 1, p. 404.) At the same time this medical jurist states that, in his opinion, ergot of rye has no direct action as an abortive; in fact, that it is not an ecbolic. ('Ann. d'Hyg.' 1865, 1, 139.) The numerous cases, showing its efficacy, and its extensive use in midwifery practice, are sufficient to prove that this opinion is not borne out by facts. In respect to its operation, it may be observed that the effects produced by its administration are not such as readily to excite suspicion. It does not cause the decided symptoms of irritation observed in the action of savin, nor the nervous symptoms which are usually produced by rue. In medicinal doses, given at proper intervals, the only marked effect which it produces on a pregnant woman is a lowering of the pulse. Sometimes other symptoms of a severe character have presented themselves. ('Ann. d'Hyg.' 1856, 1, 140.) If a person dies from the effects of this drug, the results are legally the same, whether its operation as a noxious substance is of a primary or secondary kind.

Action of Ergot. Doses. Analysis.—In doses of from half a drachm to two drachms ergot in powder has caused nausea, vomiting, dryness of the throat, great thirst, aversion to food, pain in the abdomen, slight purging, pain in the head, stupor, and dilatation of the pupils. (Pereira, 'Mat. Med.' vol. 2, pt. 1, p. 111.) Paralysis is said to have been observed among the symptoms. (See paper by Mr. Wright, 'Edin. Med. and Surg. Jour.' vol. 53, p. 14.) The medicinal dose of the powder in uterine diseases is from 5 to 15 grains. It is employed in a larger dose (from 20 to 60 grains at intervals of half an hour) to excite uterine action either for abortion or parturition. The dose of the tincture is one drachm (a teaspoonful); this is considered to be equivalent to 20 grains of the powder. The dose of the ethereal tincture, according to Pereira, when employed for the purpose of exciting uterine action, is one drachm every half-hour for three or four doses. ('Mat. Med.' vol. 2, pt. 1, p. 118.) The reader will find a large collection of cases, illustrating the properties of this drug, in Wibmer ('Arzneimittel und Gifte,' vol. 2, p. 80——*Sphacelia segetum*; Pereira, 'Mat. Med.' vol. 2. pt. 1, p. 102; and Horn's 'Vierteljahrs.' 1866, 1, 221.) Ergot must be regarded as a noxious substance, and by some authorities it is ranked among narcotico-irritant poisons. It does not easily cause death in one large dose, but its fatal operation appears to be more strikingly developed by its long-continued use in small or medicinal doses. Its active properties have been ascribed to the presence of an oil or oleo-resin, soluble in ether. According to Herrmann an ethereal solution distilled yields a fixed oil of a brownish-yellow colour, of aromatic flavour and acrid taste—viscid, of a specific gravity of 0·924, and not drying. This oil amounted to about one-third of the weight of the ergot, and consisted chiefly of pulmitic acid, oleic acid, and glycerine. There is reason to believe that the oil of ergot exerts no particular action, either as a medicine or as a poison. An alkaloid called *ecboline* has been discovered associated with the oil, and separable from it by a complex process (see 'Pharm. Jour.' Sept. 1871, p. 242); to this alkaloid probably the medicinal action of ergot is due. It is soluble in water and alcohol. The aqueous extract is more powerful than the alcoholic. It has a bitter taste and an alkaloid reaction, and is precipitated by

corrosive sublimate, white; phospho-molybdic acid, yellow; tannic acid, dirty white; biniodide of potassium, reddish-brown; chloride of gold, brownish; and chloride of platinum, orange. The solid principle, called *ergotin*, to which its medicinal properties were formerly assigned, is described by Herrmann as a constituent of the red colouring matter contained in the dark purple outer coat.

The form and characters of the ergot in mass are well known to professional men. It consists of grains varying in length from half an inch to an inch and a quarter, and the breadth of about the eighth of an inch. The grain is cylindrical, blunt at the ends, and curved like the spur of a cock. The outer coat is of a dark purple colour, almost black, irregularly fluted on the surface, which is often irregularly cracked and fissured. In the annexed illustration (Fig. 150), 1 1 represent the ergot of rye as it is usually seen. The smaller of the two grains represents the average size; 2 2 are sections of the grains, and 3 represents a transverse section magnified thirty diameters. The spongy character of the substance of the ergot is here more distinctly seen.

Fig. 150.



The Ergot of Rye.

The powder of ergot has a faint fishy smell; this is especially observed when it is rubbed with a solution of potash. This alkali dissolves it in part, and the solution acquires a dingy-red colour. In the form of tincture, alcoholic or ethereal, the peculiar fishy odour of the extract when treated with potash is well marked. This is considered to be owing to the production of propylamine. It may, however, be concealed by other odours. Sometimes small particles of ergot, presenting a pink-red colour in the dark external coat, may be detected in the sediment by the microscope. When ergot has been taken in powder, fragments of it may be found scattered over the lining-membrane of the stomach or bowels; these may be identified by the characters described. The ethereal tincture of ergot, evaporated to an extract, yields a yellowish coloured oil, which if any of the colouring matter of ergot is present acquires a reddish colour when heated with a solution of potash. It also evolves a fishy odour of propylamine.

The colour produced by potash or other alkalies with ergot of rye is purely a pigment-reaction, and therefore only occurs when any portion of the coloured coat of the ergot is present. As the pigment is not soluble in alcohol and ether, the action of alkalies upon the residues of these solutions is sometimes negative. In old and damaged preparations the fat is rancid, and the fatty acid may dissolve a portion of the coloured pigment, which will then be turned of a rose or carmine-red by alkalies. A fresh and pure specimen will give nothing to ether, which will be coloured by the addition of an alkali. On the chemical and microscopical properties of ergot see a paper by Dr. Lex (Horn's 'Vierteljahrs.' 1866, 1, 231).

It is not probable that a sufficient quantity of this substance will be found in the body of a person to whom it is alleged to have been given, to allow of the separation of *ecboline*. The medical jurist must rely upon the physical properties of the fungus if he can obtain any of it. A spectral examination of the red alkaline solution of colouring matter presents nothing characteristic. The dry powder, heated in a reduction-tube, yields nitrogen as ammonia, and sulphur as sulphuretted hydrogen, discoverable by red litmus and lead-paper. Old samples smell strongly of ammonia, and contain acari.

Local applications. Injections.—In a case which occurred in France, it was proved that abortion had been caused by the injection of some corrosive and irritating substance into the vagina. The genital organs, as well as the abdominal viscera, were found in a high state of inflammation. ('Med. Gaz.' vol. 37, p. 171.) This is an unusual mode of perpetrating the crime, but it is one which can hardly escape detection. An analysis of the tissues might be required, in order to determine the nature of the substance used. It appears from a trial which took place at the York Summer Assizes, 1853, that this mode of attempting to procure criminal abortion has been the subject of a prosecution in this country. It was established by the evidence that some liquid was injected into the vagina by a syringe, but there was no proof of the nature of this liquid; and as it was not shown to be of a *noxious* nature, the learned judge who tried the cause directed an acquittal. ('Lancet,' July 23, 1853, p. 89.) It is proper to state, however, that the mere mechanical effect of an innocent liquid freqently applied may be more effectual in producing abortion or premature labour than the use of any irritating liquids. In medical practice tepid water has been employed as an injection for the purpose of inducing premature labour in advanced pregnancy. Dr. Lazarewitch has published twelve cases in which the injection of water at 95° caused the uterus to contract and expel its contents. ('Trans. of the Obstetric Society,' vol. 9, p. 161.) The earliest period at which Dr. Lazarewitch employed water was in the thirtieth week of pregnancy. In most of the cases the women had reached the thirty-sixth week of pregnancy. This is much later than the usual period at which abortion is commonly attempted for criminal purposes, namely, about the twenty-eighth week. At the same time it proves that an innocent injection may be used to produce abortion, and according to the judicial decision above given the use of such a liquid does not render a person criminally liable. The words of the statute, however, 'other means whatsoever,' appear sufficiently comprehensive to include the use of a non-noxious liquid, and according to a judicial opinion given in the case of *Wallis* (*Reg.* v. *Wallis*, p. 200), it is not material to prove that the liquid employed is of a 'noxious' nature.

Signs of abortion in the living and dead.—These are practically the same as those elsewhere described as the signs of delivery. (See *ante*, pp. 161, 166.) The examination may extend to the woman either living or dead. In the former case there will be some difficulty, if the abortion has occurred at an early period of gestation, and several days have elapsed before the examination is made; in the latter case the investigation is not always free from difficulty. Dr. Shortt, of the Madras Presidency, thus summarizes the symptoms which he met with in numerous cases which came before him officially:—He agrees with others that this crime is very frequent in India, and leads annually to the loss of many lives. In that Presidency alone there were 306 cases in two years, 1863–4. In the cases which he examined up to a fortnight or a little later after the abortion, the vulva and passages were relaxed, the mouth of the uterus patulous, and in the early stage there was a lochial secretion, replaced in later cases by a white mucous secretion, having the peculiar smell common to women in the puerperal state. Among other symptoms were a distension of the breasts, a flow of milk on pressure, and a knotty feeling in them. There was a general anæmic or bloodless condition of the body, with sunken eyes, an excited pulse, and dry skin. In multiparous women the womb was more patulous, and the neck was not distinguishable; but in primiparous women the mouth of the uterus, although patulous to a small extent, still had the neck protuberant. ('Obstetric Transactions,' vol. 9, p. 9.)

It is believed by many physiologists that menstruation is a state in some measure vicarious to conception, and the appearances presented by the generative organs during the menstrual period are somewhat similar to those which

are observed after conception in its early stage. Mr. Whitehead remarks, that in persons who have died while the menses were flowing, the uterine walls were thickened and spongy, and the mucous lining was more or less swollen and suffused. The neck and lips of the uterus were swollen, the orifice was open, and the vaginal membrane and clitoris involved in the increased action. One of the ovaries was found larger and more congested than usual, presenting evidences of the recent escape of an ovum. (On 'Abortion,' p. 196.) Unless these facts are attended to, an examiner may form an erroneous opinion respecting the chastity of a deceased woman. (For some remarks on the mode of conducting the examination of the woman, and of the embryo or fœtus in cases of abortion, see 'Annales d'Hygiène,' 1856, 1, 149, 153.)

Important questions may arise when it is alleged that abortion has been caused by the use of instruments, and death is referred to peritonitis, as the result of their employment. In these cases a medical opinion should not be based upon the statements either of the woman or of her friends, but upon some distinct and satisfactory medical proofs that mechanical violence has been done to the uterus, its contents, or its appendages. Peritonitis, or inflammation of the lining-membrane of the abdomen, may arise from a variety of causes. If we assign it to a particular cause, and thus implicate another in a felonious charge, we should do this only upon *medical* facts obtained by an examination of the dead body: we should deal with such cases as if we knew nothing of their history. In May 1863, I was consulted by Mr. Lewis, coroner for Essex, in reference to the death of a woman named *Susannah Barker*. It was supposed that her death had been caused by attempts made to produce criminal abortion. It appeared that, after three days' illness, deceased was taken in labour and was delivered of a dead child, which was between the sixth and seventh month of uterine age. She died a few hours afterwards. On an inspection of her body, it was found that the cause of death was peritonitis. She had previously complained of great pain in her abdomen, and there was no doubt that peritonitis was developed before she was delivered; in fact, the peritonitis appeared to be the direct cause of the abortion. She admitted to her medical attendants that she had taken some powders to cause miscarriage, and further, that a person calling himself a medical man had, about a week before, introduced two instruments into her body, which had caused her great pain. Besides extreme inflammation of the peritoneum, which was the immediate cause of death, the heart, lungs, and stomach were healthy, and the uterus presented no appearances excepting those arising from recent delivery; it was perfectly natural, and free from all marks of injury. There was no injury to the vagina, nor any wound in the peritoneum itself. There was no mark of violence on the body of the child; in short, this could have sustained no injury, as the membranes surrounding it were not ruptured. The medical gentleman who examined this case thought that the fatal peritonitis had been caused by the introduction of instruments into the vagina, and that this might occur without leaving after death any traces of their employment. At the same time it was admitted that a speculum, used in the ordinary way, would not produce peritonitis, and it was alleged in defence that a speculum only had been used.

The connection of the peritonitis with the alleged manipulations of the unlicensed practitioner rested more on surmise than proof. The absence of any bruise, puncture, or laceration affecting the vagina, uterus, or fœtus, with the fact that, whatever may have been the instruments used, the membranes were left entire, rendered it impossible to assign the peritonitis with absolute certainty to the acts of the person who was charged with causing the death of the woman. For anything that appeared to the contrary, he might have used a speculum, and it is well known that this instrument, although frequently introduced into the vagina, does not cause peritonitis. The connection of the

peritonitis with instrumental violence, therefore, was not in this case established, and the jury by their verdict discharged the suspected person. They could do no otherwise, for there was not the slightest *medical* proof that any improper instrument had been introduced into the vagina with felonious intention.

In September 1871, a case occurred at Rotherham, in which a druggist was charged with using instruments to cause abortion, which had led to the death of a woman from peritonitis. It appeared also that he had given to her doses of the muriated tincture of iron. The woman was delivered of a dead fœtus at about the fifth month, and she herself died shortly afterwards. There was nothing in the body of the woman or of the fœtus to show that instruments had been used, but it was quite clear that peritonitis was the cause of death. One medical witness thought that an operation had been performed on the body of the woman, but it was admitted that peritonitis might arise from a variety of causes in a woman who had had a miscarriage. ('Pharm. Jour.' 1871, p. 256.) On the diagnosis of abortion and its causes, see a paper by Dr. Rudolph Lex (Horn's 'Vierteljahrsschrift,' 1866, 1, 179.)

Feigned abortion.—For various motives, into the consideration of which it is unnecessary to enter, a woman may charge another with having attempted or perpetrated the crime of abortion. Such a charge is not common, because, if untrue, its falsity may be easily demonstrated. A young woman, admitted into Guy's Hospital in April 1846, charged a policeman (who, according to her statement, had had forcible intercourse with her), with having given her some substance to produce abortion, and having subsequently effected this mechanically. She was not examined until nearly two months after the alleged perpetration of the crime, when the late Dr. Lever found that there was no reason to believe that she had ever been pregnant. This was a case of feigned abortion. When charges of this serious kind are brought forward, they are always open to the greatest suspicion, unless made immediately after the alleged attempt, as it is then only that an examination can determine whether they are true or false. If so long delayed as in this instance, without any satisfactory reason, the presumption is that they are false.

Legal relations.—In the statute for the consolidation of the criminal law (24 and 25 Vict., chap. 100, ss. 58 and 59), the nature of this crime, and the proofs required to establish it, have been more explicitly stated than in former Acts. By clause 58 (on attempts to procure abortion), it is enacted that 'Every woman, *being with child*, who, with intent to procure her own miscarriage, shall unlawfully administer to herself any poison or other noxious thing, or shall unlawfully use any instrument or other means whatsoever with like intent, and whosoever, with intent to procure the miscarriage of any woman, *whether she be or be not with child*, shall unlawfully administer, &c., shall be guilty of felony.' Formerly, women who endeavoured to produce abortion in themselves were not guilty of any offence against the law. In *Reg.* v. *Warboy* (Cent. Crim. Court, August 1863), the prisoner, a widow, was convicted as an accessory before the fact to the felonious using by one *Morgan* of a certain instrument upon herself, with intent thereby to produce miscarriage. The latter portion of clause 58 makes it immaterial, so far as another person is concerned, whether the woman is or is not with child, in accordance with the decision of the judges in *Reg.* v. *Goodhall* (1 Den. C. C. p. 187), and *Reg.* v. *Goodchild* (2 C. and K. p. 293). Clause 59 is to the following effect:—'Whoever shall unlawfully supply or procure *any poison or other noxious thing*, or *any* instrument or *thing whatsoever*, knowing that the same is intended to be unlawfully used or employed with intent to procure the miscarriage of any woman, whether she be or be not with child, shall be guilty of a misdemeanour; and being convicted thereof, shall be liable, at the discretion of the Court, to *be kept in penal* servitude for the term of three years, or to be imprisoned for

any term not exceeding two years.' This clause is intended to check the obtaining of poison, &c., for the purpose of causing abortion, by making the person who supplies, and the person who procures it, guilty of misdemeanour. It will be observed, in reference to these clauses, that the *means* employed, whatever their nature, must have been used with an *intent* to procure the miscarriage of a woman—a point which will be sufficiently established by a plain medical statement of the means employed. Supposing that a drug has been used, the witness may be further required to state whether it is 'a poison or other *noxious* thing.' I must refer the reader to what has been said elsewhere (vol. 1, p. 179), in order that he may be able to judge how far the substance administered would fall under the description above given. Whether the substance would or would not have the effect intended, *i.e.* of inducing abortion, is perfectly immaterial.

Noxious substances.—Is it necessary to prove that the substance procured or administered is of a noxious nature? Some uncertainty may exist as to the strict meaning of the word *noxious*. All will allow that the word implies something injurious to the system, but a difference of opinion may arise among medical witnesses with respect to its application to the subject under discussion—as, for example, with respect to rue or savin. A substance must be regarded as injurious to the body, or noxious, either according to the form, quantity, or frequency with which it is administered. Savin, ergot, and rue are irritant; and they become noxious when given in large doses, or in small doses frequently repeated. ('Ann. d'Hyg.' 1838, 2, 180.) Aloes and castor-oil are innocent when taken in small doses; but they acquire noxious or injurious properties when administered frequently, or in large quantity, to a pregnant woman. To confine the term 'noxious,' therefore, to what is strictly speaking a poison *per se*, would be giving a latitude to attempts at criminal abortion which would render the law inoperative. (See the case of *Reg.* v. *Stroud*, Abingdon Sum. Ass. 1846.) The small quantity of the substance taken at once does not affect the question, provided the dose be frequently repeated. A case in which I was consulted by Mr. Reynolds (a former pupil) was tried at the Exeter Winter Assizes, 1844. Two powders, weighing each one drachm, were prescribed by the prisoner: one consisted of colocynth, the other of gamboge, and with them was half an ounce of a liquid (balsam of copaiba). They were to be mixed together, and a fourth part to be taken four mornings following. Mr. Reynolds said, in answer to the question whether such a mixture was noxious or injurious, that each dose would be an active purgative, and might thereby tend to produce abortion. One dose would not be productive of mischief in a healthy countrywoman, but its frequent repetition might lead to serious consequences in a pregnant woman. In a trial which took place at the Norwich Lent Assizes, 1846 (*Reg.* v. *Whisker*), it was proved that the prisoner had caused to be taken by the prosecutrix a quantity of *white hellebore*, in powder, for the purpose of procuring abortion. One medical witness said he considered hellebore to be noxious to the system, but he knew of no case in which it had produced death; and under these circumstances he did not consider himself justified in calling it a poison. Another medical witness stated, in his opinion, it belonged to the class of poisons. The judge, in summing up, told the jury that *that* was to be regarded as a poisonous drug which, in common parlance, was generally understood and taken to be such; and he thought the medical evidence sufficiently strong to bring hellebore within the meaning of the statute. The jury found the prisoner guilty, alleging that in their belief white hellebore was a poison. ('Med. Gaz.' vol. 37, p. 830.) The only circumstance calling for remark in this case is, that any doubt should have been entertained by a medical practitioner respecting the poisonous properties of white hellebore. It is a powerful vegetable irritant, and has caused

death in several instances; yet on this occasion it appears to have been admitted to be *noxious*, but not *poisonous!*

The nature of the substance administered, and that it was *noxious*, was formerly required to be proved. In *Reg.* v. *Taylor* (Exeter Winter Ass. 1859), some powders had been given by the prisoner to a girl with the view of inducing abortion. No portion of the powders could be obtained for examination; but two medical gentlemen who heard the evidence deposed that in their opinion the powders were of a noxious nature. In the defence, it was urged that this had not been proved by chemical analysis. The jury adopted this view, and returned a verdict of acquittal. In *Reg.* v. *Wallis* (Winchester Aut. Ass. 1871), (see p. 186, *ante*), Brett, J., in addressing the grand jury, is reported to have called their attention to the words of the statute, which declares that where any person shall unlawfully administer a poison or some other noxious thing, or shall unlawfully use any instrument or other means whatsoever, with intent to procure miscarriage, he shall be guilty of felony. The learned judge said that, having regard to the words 'other means whatsoever,' though there might be some doubt as to the construction of the statute, he should direct that in one count of the indictment the word 'noxious' should be omitted, and he should hold that if the person accused did administer some drug or something which he thought would procure miscarriage with that intent, although the thing itself would not procure that miscarriage, he would, nevertheless, be guilty of the offence, and they ought to find a true bill.

According to this judicial decision, it would appear that it is not in all cases necessary to prove by medical evidence that the substance procured or administered was of a noxious nature. The words of the 59th clause, as to procuring a noxious thing, or any instrument or 'thing whatsoever,' strictly interpreted, would include all substances, noxious and innoxious. If this view is generally adopted in future cases, medical evidence will be much simplified. Counsel will not be under the necessity of severely cross-examining medical witnesses on the strict meaning of the word 'noxious.' In *Reg.* v. *Wallis* the substances procured by the accused were not noxious, but the jury acquitted him on the ground that he did not administer the drugs: hence the question of noxiousness did not formally arise. From the ruling in this case, it would appear that if a person procured or administered castor-oil or camphor julep, with intent to procure miscarriage, and with the belief that the substance would produce it, he would be found guilty of the offence. This being so, the use of the words poison and noxious thing in the statute is surplusage, and tends only to cause confusion in the medical evidence.

In reference to the proof of this crime, it is not required, under the circumstances, that any specific injury should have been done to the woman, or that abortion should have followed, in order to complete the offence. There is every reason to believe that the crime is frequent, but its perpetration is secret. Applications are frequently made to medical men and druggists by the lower class of people for drugs for this purpose; the applicants appear to have no idea of the criminality of the act. Under the name of 'female pills' or 'drops,' medicines are thus dispensed in secrecy; and those who supply, as well as those who receive them, appear to have no idea that they are exposing themselves to a criminal prosecution. In one case a bottle containing a liquid, supposed to have been used for the purpose of abortion, was sent to me for examination. It was labelled 'Persian Otto of Roses.' It contained a strong ethereal tincture of ergot of rye!

On a recent trial for criminal abortion, the medical evidence went far beyond its customary boundary. It appeared that the prisoners had applied to a medical man to supply them with drugs for the procuring of abortion. The

medical man, mistaking his duty under such circumstances, gave information to the police, and acting under their advice supplied some drug which could do no injury. The prisoners were thus led to the commission of a felony, and at the trial the medical man appeared in the capacity of informer as well as expert, a circumstance which led to some severe observations from the judge. When such an application is made to a professional man there is no objection to the fact being made known to the police or magisterial authorities, but beyond this he should not go. He should refuse to supply the applicants with drugs or lend himself in any way as a detective for the purpose of a prosecution. The act was no doubt done with a good intention to protect the public, but under a mistaken sense of duty. (See, in reference to the frequency of this crime, a paper in the 'Medical Gazette,' vol. 46, p. 487; also 'Med. Times and Gaz.' Nov. 21, 1857, 524, 537.)

On inducing premature labour. Medical responsibility.—It may be proper to offer here a few remarks upon the common practice of inducing *premature labour*, in certain cases of disease, of deformity of the pelvis, and in cases of excessive vomiting from pregnancy. This practice has been condemned as immoral and illegal; but it is impossible to admit that there can be any immorality in performing an operation to give a chance of saving the life of a woman, when, by neglecting to perform it, it is almost certain that both herself and the child will perish. (See, on the morality, safety, and utility of the practice, Ramsbotham's 'Obstet. Med.' p. 315.) Any question respecting its illegality cannot be entertained; for the means are administered or applied with the *bonâ fide* hope of benefiting the female, and not with any criminal design. It is true that the law makes no exception in favour of medical men who adopt this practice, nor does it in the Statute on Wounding make any exceptions in favour of surgical operations; but that which is performed *bonâ fide* would not be held to be unlawful. The necessity for the practice ought to be apparent: thus, for instance, it should be shown that delivery was not likely to take place naturally, without seriously endangering the life of a woman. It is questionable whether, under any circumstances, it would be justifiable to bring on premature expulsion, merely for the purpose of attempting to save the life of a child, since the operation, unless performed with care, is accompanied with risk to the life of the mother.

Prof. Thomas, U.S., puts in a concise form the distinction between premature labour and abortion. The former denotes a premature expulsion of the contents of the uterus, the latter a failure in the results of utero-gestation. The induction of premature labour is in one essential respect different from that of abortion, and is called for in the fulfilment of different indications, of which he enumerates fourteen. Premature labour being resorted to only after the period of maturity of the child, does not involve the sacrifice of its life, but often adds to its prospect of living by the removal of it from a position of danger and sometimes even of certain death; or to put the matter more tersely, abortion is resorted to by medical men in the interest of the mother alone at the expense of the life of the child; while premature labour is induced sometimes for the sake of the mother, sometimes for that of the child, and sometimes in the interest of both. ('Amer. Jour.' July 1870, p. 285; also April 1871, p. 581, and 'Lancet,' 1872, 2, 740.)

Abortion in the sense implied by Dr. Thomas (expulsion of the contents of the uterus at an early stage of gestation) is not common in England. A medical man would lay himself open to a criminal prosecution if he procured the abortion of a woman at an early stage of pregnancy. There could be no justification for this practice, since the child could not be born alive, and the life of the woman would be seriously endangered. As the induction of premature

labour may take place from the seventh to the end of the eighth month, and there is nothing to prevent a pregnant woman reaching this stage, a medical man acting *bonâ fide* would wait until this period had been reached.

The grounds upon which many eminent authorities have objected to this practice are:—1. That there are few cases in which parturition, if left to itself, might not take place at the full period; 2. The toleration of the practice would lead to great criminal abuse; 3. It is attended with danger to the mother and child. It is undoubtedly true that parturition will sometimes take place safely at the full time, even when the deformity of the pelvis is apparently so great as to lead many accoucheurs to suppose natural delivery to be utterly impossible. Dr. Lilburn has reported the case of a woman who laboured under great deformity of the pelvis, but who was twice delivered in safety, and the child survived. ('Med. Gaz.' vol. 19, p. 933.) It is therefore not improbable that many cases of the kind are prematurely treated, which, if left to themselves, would do well without interference. Hence a cautious selection should be made, because the operation is necessarily attended with some risk; it does not insure safety to a woman and child. All that we can say is, that, according to general professional experience, it places her in a better position than she would be in if the case were left to itself. It appears to me that before a practitioner resolves upon performing an operation of this kind he should hold a consultation with others; and, before it is performed, he should feel assured that natural delivery cannot take place without greater risk to the life of the woman than the operation would itself create. These rules may not be observed by obstetric experts in large practice; but the non-observance of them is necessarily attended with some responsibility to a general practitioner. In the event of the death of the woman or child, he exposes himself to a prosecution for a criminal offence, from the imputation of which even an acquittal will not always clear him in the eyes of the public. If the child were born alive, and died merely as a result of its immaturity, this might give rise to a charge of manslaughter. Within a recent period several practitioners have been tried upon charges of criminal abortion—whether justly or unjustly it is not necessary to consider; but they had obviously neglected to adopt those simple measures of prudence, the observance of which would have been at once an answer to a criminal charge. Because one obstetric practitioner of large experience may have frequently and successfully induced premature labour, without observing these rules, and without any imputation on his character, this cannot shield another who may be less fortunately situated. A charge is only likely to arise when a man has been unfortunate, and the responsibility of one operator cannot be measured by the success of others. A case occurred at Portsmouth in 1848, in which a woman died from loss of blood, which took place during an attempt to induce premature labour. A small aperture was discovered after death in the left common iliac artery, and more than a pound of blood had been lost. This however was ascribed to a thinning of the coats of the artery, and not to a puncture of the vessel during the operation! (See 'Lancet,' July 22, 1848, p. 107.) For some judicious remarks on the induction of premature labour, by Dr. Radford, see 'Med. Gaz.' vol. 47, p. 583.

As in the law of England so in the law of France, proof of pregnancy is not essential to the crime of abortion. Dr. Bayard relates a case in which a woman was convicted, in 1846, of an attempt to induce abortion in a woman who was subsequently proved not to be pregnant, but to be labouring under ovarian disease. The prisoner was convicted and sentenced to eight years' imprisonment. ('Ann. d'Hyg.' 1847, 1, 466.)

Abortion of monsters.—Would the law be applicable to cases in which the child was dead in the uterus, or in which it was a monster without human shape?

The symptoms indicative of the death of the child in utero are elsewhere stated (see INFANTICIDE, *post*). Its death subsequently to the attempted abortion might perhaps be adduced as corroborative evidence of the crime; but, even if it were dead at the time of the attempt, the offence would be completed. It cannot be doubted that the expulsion of a dead child would come under the popular signification of a *miscarriage*; and if the words were strictly interpreted, a prisoner might be convicted whether the child were living or dead, for it has been already stated that it is not necessary that any abortion should have taken place. With respect to *monsters*, the question actually arose in a case tried at Drôme, in France, in 1841. ('Gaz. Med.' Juillet 1841; also 'Brit. and For. Med. Rev.' vol. 24, p. 563.) A girl was accused of procuring abortion. The aborted fœtus, of about the sixth month, was without a head (acephalous), and there was no vertebral canal for the spinal marrow. Other organs were also deficient or imperfectly formed. The medical witnesses had declared that it had never breathed, and that its life had ceased with gestation. On the upper part of the body was a wound, which had been produced by a pointed instrument, probably just before it was expelled; this they thought had caused death. The counsel for the prisoner contended that this could not be regarded as a case of criminal abortion, owing to the monstrosity of the offspring; and the jury acquitted her. As proof of pregnancy is no longer required, monstrosity in the fœtus should make no difference in the nature of the crime.

Extra-uterine fœtation.—Would the law apply to cases of extra-uterine (tubal) pregnancy? There can be no doubt that the crime of abortion would apply to cases of this description; and a person would be equally amenable for the attempt, whether the fœtus was in the uterus or in the Fallopian tube. For a case of attempting to procure abortion in extra-uterine fœtation, see 'Obstetric Transactions,' vol. 5. The symptoms of extra-uterine pregnancy, especially of the tubal kind, are similar to those of ordinary pregnancy, and are not to be distinguished from them in the early stages (see 'Med. Gaz.' vol. 36, p. 103). In an advanced stage the case is different, the symptoms are wholly unlike those of pregnancy, and may wrongly give rise to the suspicion that the woman has died from criminal interference. A former pupil writing to me from Rome in May 1870, gave me the particulars of the following case:—On the 9th of May 1870, a young lady residing in Rome, and supposed to be some months advanced in pregnancy, died very suddenly soon after taking some medicine prescribed for her by a physician. She had enjoyed excellent health, with the exception of being occasionally subject to slight abdominal pains threatening abortion, and to relieve these pains a physician was consulted. It seems that she had aborted on a previous occasion. She was found to be in a state of great depression, but not suffering at the time from any dangerous symptoms. The physician had prescribed a sedative medicine, of which the patient had taken only three doses in teaspoonfuls when she fell into a deep sleep, and in this state she died, the symptoms of depression not having been relieved. The family attributed her death to some mistake made by the druggist who prepared the medicine. The tribunal before which the charge of poisoning was laid directed an inspection of the body. The result was, that a quantity of blood was found effused in the lower part of the abdomen. This had obviously arisen from the rupture of a tumour, containing an embryo of which the remains were found in the midst of the clots of blood in the pelvis. It appeared to be of only a few weeks' development. The body had been contained in a cyst external to the uterus, which had suddenly given way and had thus led to fatal hæmorrhage. It was the suddenness of death soon after taking medicine, without any preceding symptoms of illness, or any other obvi-

ous cause except the medicine to account for her condition, that gave rise to the enquiry. A post-mortem examination revealed, as it always will do under these circumstances, the real cause of death.

Abortion of moles.—The use of the word *miscarriage* in the statute, without any explanation of the meaning assigned to it, might, but for the decision in *Reg.* v. *Goodhall* (Notts Lent Assizes, 1846), have created some difficulty on trials for abortion. In a popular sense (and here a *popular* appears to have been purposely selected in preference to a medical term), miscarriage signifies the violent expulsion not merely of a child but of moles and other diseased growths, or even of coagula of blood. In these last-mentioned cases the woman is not actually pregnant, although she and the accused may imagine that she is. But whether the uterus contains these morbid growths, or whether it is in the virgin state, the person who has used the means with *intent*, may still be convicted of an attempt to procure abortion. It has been elsewhere stated (*ante* p. 174), that the appearances presented when a mole has been expelled as a result of abortion, cannot be distinguished from those produced by the expulsion of the fœtus. Dr. Simkel has published a full report of a case in which a mole (derived from blood) had been discharged between the second and third months of pregnancy as a result of violence applied to the abdomen. ('Vierteljahrsschrift,' 1871, 1, 74.) The proof that the substance expelled is a mole may be of importance on a question of concealment of birth, but cannot affect the responsibility of a person charged with the crime of abortion.

Chemical evidence. Blood in abortion. Liquor amnii.—In the event of an abortion having taken place, stains produced by blood or by the waters (liquor amnii) may be found on the linen of a female, and a practitioner may be required to say whether these stains are of a nature to throw any light upon the perpetration of the crime. A woman who has aborted may allege that the stains are those of the menstrual discharge. Speaking generally, there is no practical distinction between menstrual and other blood (see vol. 1, p. 538). The menstrual blood contains less fibrin, is commonly acid and watery from admixture with the mucous discharges, and when examined by the microscope it presents epithelial scales, or cells derived from the mucous membrane. These scales or cells belong to the columnar variety. (See RAPE, *post.*) Not much reliance can be placed upon their discovery, since the mucous membrane of the organs of respiration is lined with similar cells. Hence expectorated blood might be mistaken for menstrual. Cells of a similar shape line the whole of the mucous membrane from the stomach to the anus. The blood of piles might thus be confounded with menstrual blood. The blood discharged in abortion will present the usual characters of blood, elsewhere described (vol. 1, pp. 527, 538); but it may be diluted with the waters simultaneously discharged. This question received the special attention of the French Academy a few years since, in reference to the crime of abortion; and the report made was to the effect that in the present state of science there was no certain method by which the blood of menstruation could be practically distinguished from the blood discharged from a woman in a case of abortion or from blood in infanticide ('Ann. d'Hyg.' 1846, 1, 181). In a more recent case, MM. Devergie and Chevallier were required to state whether certain stains on the dress of a woman supposed to have aborted, were or were not caused by the waters (liquor amnii). A chemical analysis merely revealed the presence of an albuminous liquid. The most elaborate experiments satisfied the reporters that neither by the odour, nor by any other process, could the liquor amnii, dried on linen, be identified. (See 'Ann. d'Hyg.' 1852, 2, 414.) It may, however, be of importance to observe this this liquid slightly discolours and stiffens the fibre of the stuff on which it has been effused, and that it can be readily extracted by cold water. The solution possesses all the properties of albumen. The amount of albumen con-

tained in the liquor amnii decreases as gestation advances. At the fourth month it forms 10·77 per cent. of the liquid; at the fifth month 7·67: at the sixth month 6·67; and at the ninth month only 0·82 per cent. M. Chevallier's experiments show that the amniotic liquid has all the usual chemical properties of a very diluted solution of albumen ('Ann. d'Hyg.' 1856, 1, 156).

BIRTH. INHERITANCE.

CHAPTER 65.

EVIDENCE OF LIVE BIRTH IN CIVIL CASES — LEGAL RIGHTS OF THE FŒTUS IN UTERO—DATE OF BIRTH—DIFFERENCES BETWEEN ENTIRE AND PARTIAL BIRTH —SIGNS OF LIVE BIRTH INDEPENDENT OF BREATHING OR CRYING — MOTION OF A LIMB OR PULSATION OF THE CORD A PROOF OF LIVE BIRTH—VAGITUS UTERINUS — TENANCY BY COURTESY — CÆSAREAN EXTRACTION OF CHILDREN— LEGAL BIRTH — POST-MORTEM BIRTHS — CRANIOTOMY—MONSTERS—WHAT CONSTITUTES A MONSTER IN LAW — DEPRIVATION OF LEGAL RIGHTS — DOUBLE MONSTERS—CHRISTINA RITTA—THE SIAMESE TWINS.

Live birth in civil cases.—The law of England has not defined the meaning of the term Birth, in reference to civil jurisprudence; but if we are to be guided by the numerous decisions which have been made on trials for infanticide, it must be regarded as signifying 'the entire delivery of a child,' with or without its separation from the body of the mother. (See INFANTICIDE; see also Chitty, 'Med. Jour.' 412.) So long as an infant remains in the uterus it is said in law to be '*en ventre sa mère*'; but it is legally supposed to be born for many purposes. ('Blackstone's Comm.' vol. 1, p. 130.) A child in the womb may have a legacy or an estate made over to it; it may have a guardian assigned to it; but none of these conditions can take effect unless the child is born alive. So the fœtus may be made an executor; but it is very judiciously provided that an infant cannot act as such until it has attained the age of seventeen years! The Roman and English systems of law apply the same term (*venter*) to the unborn child; when born dead it is called *abortus*, abortion; when alive, *partus*, *infans*, infant. In 1871 the following case affecting the *venter* came before the Court of Admiralty. A ship was damaged, in collision with another, called the 'Eleutheria,' and a man named *Noyes*, one of the crew of the damaged ship, was killed. The widow claimed of the proprietors of the 'Eleutheria,' damages in respect of a child with which she was then pregnant. Sir R. Phillimore held that the child was entitled to recover for the loss sustained of its father, although the damages could not be assessed until the child was born. The maxim of English law derived from the Roman law is that a child '*en ventre sa mère*' is to be considered as actually born if any question arises for its benefit. This ruling was confirmed by Lord Westbury in *Blasson* v. *Blasson*, but this fiction is applicable only for enabling such child to take a benefit to which it would have been entitled if actually born. In the case decided by Sir R. Phillimore the action of the Court was suspended until the child was born, as if still-born there would be an end to any claim. ('Med. Times and Gaz.' 1871, p. 146.)

Date of birth.—Medical evidence has occasionally been demanded in Courts of law respecting the actual date of birth of individuals, in cases in which a

period of a few days, hours, or even minutes was required to prove the attainment of majority, and therefore a legal responsibility for the performance of civil contracts into which the parties had entered, either knowingly or ignorantly, when minors. Some cases of this kind have been decided by the evidence of the accoucheur himself; others, when the accoucheur was dead, by the production of his case-books; and it is worthy of notice that the strictness and punctuality of some medical practitioners, in making written memoranda of cases attended by them, have in more than one instance led to a satisfactory settlement of such suits, and the avoidance of costly litigation. The proof of the exact date of birth is also of considerable importance in certain cases of contested legitimacy.

The most important medico-legal questions connected with this subject are those which arise in contested suits relative to succession, or the inheritance of property. A child that is born alive, or has come *entirely* into the world in a *living* state, may by the English law inherit and transmit property to its heirs, even although its death has immediately, and perhaps from morbid causes necessarily, followed its birth. Should the child be born dead, whether it died in the womb or during the act of birth, it does not acquire any civil rights; for it is not regarded legally as a life in being, unless it manifests some sign of life *after* it is entirely born and separated from the mother. Some have considered that *partial birth*, provided a child is living, should suffice to confer the same rights on the offspring as the proof of entire birth. The following case has been adduced by Sir C. Locock in support of this view, although the question here was rather in reference to the actual date of birth than to the acquisition of civil rights therefrom: the principle is, however, the same. On a Saturday evening a lady was taken in labour with her first child. The head and one arm were born two or three minutes before a neighbouring clock struck twelve. There was a cessation of pain for several minutes, during which time the child cried and breathed freely. The rest of the body was not expelled until full five minutes after the same clock had struck twelve. Was the child born on the Saturday or on the Sunday? Certainly the birth was not completed until the Sunday: the child was still partly within the body of the mother—the circulation was still kept up through the umbilical vessels: 'but,' continues Sir C. Locock, 'I gave my opinion that the child was born on the Saturday. I considered that the child had then commenced an independent existence. The fœtal life had then to all intents and purposes ceased; and breathing—a function incompatible with the condition of a fœtus—had commenced. The navel-string will, it is true, go on pulsating for many minutes after an infant has been brought completely into the world, crying and kicking, unless it be compressed artificially; and yet no one will say that a child in such a case is not born until we choose to take the trouble to tie the navel-string. The child would not have been damaged if it had remained for hours or even days, with merely its head and arms extruded; it could have been fed in this situation.' ('Med. Gaz.' vol. 12, p. 636.) However reasonable, *medically* speaking, this view may appear, a medical jurist must shape his evidence according to what the law demands. It is elsewhere stated (INFANTICIDE), that our judges have distinctly laid down the law that no child can be considered to be *legally* born until the *whole* of its body has come *entirely* into the world. This is in relation to criminal jurisprudence, in which case, if in any, the rule should be relaxed, because its relaxation would tend to punish the wilful destruction of living infants partially born. This child could not, therefore, have been born on the Saturday, because the law does not regard partial birth as entire birth; and respiration and birth are not synonymous terms. Supposing this child to have died before its body was entirely extruded, it could not be said, even medically, that

it was born alive; and certainly it could not be considered, according to the present state of the law, to have acquired the rights of a child born living. The reasonableness of the opinion that partial birth should suffice for all the legal purposes of entire birth is a distinct question, and one over which a medical witness has no sort of control. Whatever apparent injustice may be done by adhering to this rule in respect to the civil rights of persons, there is no doubt that the evil is really of great magnitude in relation to criminal jurisprudence; for it would appear, from the present state of the criminal law, that the destruction of partially-born children, although alive and healthy, is not, legally speaking, child-murder.

On the other hand, some difficulty might arise in civil cases if the bare extrusion of a *part* of the body sufficed for all the legal purposes of *entire* birth. It might become a casuistical question as to how much of a child's body should be in the world in order to constitute legal birth; for there is no reason why, in a medical view, the extrusion of the head and shoulders should constitute birth any more than the extrusion of a hand or a foot. If it be said that the act of breathing should be combined with a partial extrusion of the body, this would be unjust; because a child is alive—its heart is evidently pulsating, and its blood circulating, as freely before the act of breathing as afterwards. Besides, it is admitted that children may be born alive, and live for some time, without breathing; and this want of respiration is no objection to these children being considered living in law. In cases referred to hereafter, children were legally pronounced to have been born alive, although they had certainly not breathed; and that a child may manifest life for a certain time without leaving in the lungs any evidence of breathing is clear from numerous reported instances. (See *Atelectasis* INFANTICIDE). If, then, proof of breathing is not demanded in cases of entire, it could scarcely be required in cases of partial birth. In the event of partial being treated as synonymous with entire birth, there would be no end to litigation; and medical opinions would vary in every case. It is doubtful whether, under such circumstances, the law could be administered with any degree of certainty or impartiality.

Admitting, then, that a child must be *entirely* born in order that it should acquire civil rights, it will next be necessary to examine the medical proofs required to show that it has been *born alive*. The question here is different from that of live birth in reference to child-murder. We must presume that a medical man is present at a delivery in which a child is born in a doubtful state, or where its death speedily follows its birth. The civil rights of a child and its heirs will depend upon the careful observation, made by him, of the circumstances attending the delivery. It is proper that he should note when the birth is completed, by the body of the child being entirely out of the body of the mother. Children born at or about midnight are thus liable to have the date of birth wrongly registered; and the legal difference of twenty-four hours, which a few seconds or minutes may make, may hereafter affect their own rights if they survive, or those of others if they die. The birthday of the illustrious Duke of Wellington was entered in the parish register as the 30th of April 1769, while there is abundant evidence for fixing it on the 1st of May; in fact, he was born just after twelve o'clock in the night between the 30th of April and the 1st of May. Nothing can be more simple than for an accoucheur to fix the true date, not by the hour at which labour commences, but by the time at which it is completed.

Signs of live birth independently of respiration or crying.—The visible respiration of a child after its birth, or as it may be manifested by its *crying*, is an undoubted sign of its having been born alive; but as it has just been stated, a child may acquire its civil rights, although it may be neither seen to breathe nor heard to cry. The pulsation of a child's heart, or even the spasmodic

twitching of any of the muscles of the body, has been regarded as a sufficient proof of live birth. The latter sign has been judicially so pronounced—*à fortiori*, therefore, the motion of a limb will be considered sufficient legal evidence, in an English Court of law, of life after birth. It is to be observed that the length of time during which these signs of life continue after a child is born, is wholly immaterial: all that is required to be established is, that they were positively manifested. A child which survives entire birth for a single instant acquires the same civil rights as if it had continued to live for a month or longer. These facts will be better understood from the following case (*Fish* v. *Palmer*), which is reported to have been tried in the Court of Exchequer in 1806. (Beck's 'Med. Jur.' vol. 1, p. 354.) The wife of the plaintiff *Fish* was possessed of landed estate in her own right. She died in 1796, after having given birth to a child which was supposed at the time to have been born dead. In consequence of the plaintiff not having had a living child (as it was assumed) during the marriage, the estate of the wife was claimed and taken by the defendant *Palmer*, her heir-at-law—the husband being obliged to surrender it under the circumstances. From information derived many years after the death of his wife, from some women who were present at the delivery, the plaintiff was led to believe that the child had not been born dead, and that the estate had therefore been surrendered to the defendant under a mistake. An action was brought to decide this question in 1806, ten years after the death of the wife, and it lay with the plaintiff to prove his allegation that the child had been born *living*. Dr. Lyon, the accoucheur, had died some time before the trial; but it was proved that he had declared the child to have been living an hour before it was born, that he had directed a warm bath to be prepared, and when the child was born, gave it to the nurse to place in the bath.

The child neither cried nor moved after its birth, nor did it manifest any sign of active existence; but the two women who placed the child in the bath swore that when it was immersed there appeared twice a *twitching* or *tremulous motion of the lips*. They informed the accoucheur of this, and he directed them to blow into its throat, but it did not show any further signs of life. The main question in the trial was whether this tremulous motion of the lips was a sufficient proof of the child having been born alive. The obstetric experts who were summoned to give evidence on this occasion differed in opinion. Drs. Babington and Haighton stated that had the child been born *dead* or had the vital principle been extinct, there could have been no muscular movement in any part of its body; therefore the child had, in their opinion, been born alive, and had manifested some evidence of life after its birth. Dr. Denman, who was called for the defendant, dissented from this view. He contended that from the evidence the child had not been born alive, and in explanation of this, drew a distinction between uterine and extra-uterine life. He attributed the tremulous movements of the lips after birth to the remains of uterine life. The Jury, however, under the direction of the Court, did not adopt this view of the case. They pronounced by their verdict that the child had been born living, and the plaintiff thus recovered an estate of which he had been for ten years deprived.

From the result of this case it would appear that the English law does not recognize any distinction between uterine and extra-uterine life as drawn by Dr. Denman. The question is simply life or death—living or dead? Dr. Denman did not assert that the child was born dead. On the contrary, he assigned the movements observed by the witnesses to the continuance of life —but of *uterine* life. The act of breathing is commonly set down as the boundary, but a child is not necessarily dead until it breathes, as the recovery of numerous children born with uterine life clearly proves. The fallacy of trusting *to breathing as a* criterion in the living or dead body, is fully shown in the

chapters on INFANTICIDE. (See ATELECTASIS.) Breathing is justly regarded by the English law as only one sign of life, and proof of the possession of active and vigorous life is not required. It cannot be admitted physiologically that a tremulous motion of the muscles can ever take place spontaneously in the body of a child really dead, and the spasmodic movement of a lip differs only in degree from the motion of a leg or arm, or of a rib by the intercostal muscles. If a certain quantity or degree of life were required to be proved instead of the bare fact of its actual presence or entire absence, the most subtle medical distinctions would be continually drawn. Non-professional persons might be easily deceived as to the act of breathing in these feeble subjects, and an examination of the dead body would not suffice to remove the doubt, since new-born infants may live for hours without any air being found in the lungs; but a person is not so likely to be deceived about the movement of an arm, a leg, or a lip.

It has been objected to this view of the case that the movements described may be the mere remains of muscular irritability, and not a sign of actual life or the vital force; but it seems to me that this is practically an admission of the presence of life or vital force under another name. Muscular irritability and spontaneous contractions are not manifested in bodies really dead, and their spontaneous occurrence proves that some vital power must still remain in the body of a child.

Some medical jurists have contended that there should be, in all cases, evidence not only of the breathing, but of the crying of a child, in order to justify a medical opinion that it was born alive; but according to Blackstone ('Commentaries,' vol. 2, ch. 8, p. 127), '*Crying*, indeed, is the strongest evidence, but it is not the *only* evidence': and Coke says, 'If it be born alive it is sufficient, though it be not heard to cry, for peradventure it may be born dumb'; he also describes '*motion*, stirring, and the like,' as proofs of a child having been born alive. So far the decision in *Fish* v. *Palmer* is borne out by good legal authority; and we may consider that although the mere warmth of the body would not be evidence of live birth, yet the slightest trace of *vital* action, in its common and true physiological acceptation—such as crying, breathing, pulsation, or motion—observed after entire birth and separation from the mother, would be deemed in English law a sufficient proof of the child having come into the world alive.

A late eminent Scotch judge informed me that in Scotland the husband's right of courtesy, or life-rent in his wife's estate, depends upon there having been a child of the marriage born alive; and for the proof of live birth it is required to be shown, not merely that it had breathed, but that the child had cried after it was born. Dr. Beck remarks that the Scotch law is more precise than the English in thus demanding proof of *crying*; but it should be added that it is more unjust. The case of *Dobie* v. *Richardson* (Court of Session, 1765) is sufficient to prove this. Dobie's wife brought forth a child about nine months after marriage which breathed, raised one eyelid, and expired in convulsions about half an hour after its birth, but *was not heard to cry*. The mother died in childbed, and the question was whether the *jus mariti* was not lost by the death of the wife within the year, without a child of the marriage which had been heard to cry. The decree made in the case was that as the wife did not live a year and a day after her marriage, and as it was not proved that the child or fœtus of which she was delivered, was heard to *cry*, the husband was not entitled to any part of his deceased wife's effects (Beck's 'Med. Jur.' 1, 358). The learned judges in this case did not stultify themselves by affirming that the child in question was born *dead*. This is a physiological and not a legal point. A child which died in convulsions half an hour after its birth could not be described as having been born dead. The law of any country may assume its own standard of life at birth. The Scotch

law thus assumes 'audible crying', but it cannot alter the physiological fact that a child may be born living without crying. It is not merely a living but a 'crying' child which conveys the right of courtesy to the husband across the border. This will be further seen from the decision in the case of Blackie (Court of Session, 1833).

In this case it was held that an averment that a child which had been born at the seventh month 'was born alive, and continued to live during three-quarters of an hour, and was perceived to breathe repeatedly, and its heart distinctly felt to beat; but it being admitted that it had not been heard to cry,' was not relevant to infer that the child was a living child. (Beck, vol. 1, loc. cit.) It was suggested in this case that the proof of breathing should suffice, but by a majority their lordships adhered to the old dicta of the law of Scotland, and decided that the only receivable proof of life in such a case was that the child had *cried*. They found that proof that a child was capable of motion, and that it had breathed for three-quarters of an hour, was not sufficient to establish life unless it had cried! There is some reason to believe that, in any future case, this will not be taken as a precedent. The attainment of greater knowledge on the nature and the proofs of life from the results of medical experience and observation, and the fact that these physiological questions have become more generally known and better understood, will probably lead to a different decision. That there should not be a power of proving life (when the death of a child takes place speedily after birth) except by direct evidence that the child had cried, is in truth a view of the matter wholly indefensible. From what will be hereafter stated (*Vagitus uterinus*, infrà) it will be seen that the crying of a child is not necessarily a sign of live birth, for it may cry during the act of birth, and die before its body is born; while the fact that it breathes and moves after birth, although from accidental circumstances it may not cry, is unexceptionable evidence of its having been born alive.

The case of *Brock* v. *Kelly* involved a claim by a widow to the estate of her husband, on the ground that a child born twenty years before, had been born living, although it was at first supposed to have been still-born. The case came before Vice-Chancellor Stuart in April 1861, and his decision confirmed the views here expressed. Dr. Freeman noticed at the birth of this child, and after separation from the mother, that there was a slight pulsation in the cord, showing a feeble but independent circulation. There was no other indication of breathing than an arched state of the chest. He had, it appears, made an entry in his diary of the birth being that of a *live* child, and believing it to be alive, he caused it to be placed in warm water to sustain its vitality; he felt sure of its being alive, for the reason above assigned. This statement was confirmed by the nurse, who had been heard to say that the child was born alive, but died the same day. This may be regarded as strong evidence that the child was really born with life, although in a passive state of existence. At the time when these observations were made, namely, twenty years before, the legal question of live birth was not raised, and there could have been no conceivable motive for mis-stating the facts or for inventing a state of things to suit a legal claim.

Dr. Tyler Smith supported the opinion of Dr. Freeman by an affidavit, considering that the fact that pulsation was observed in the umbilical cord after delivery, was a physiological proof that the child in question was not born dead. On the other side, Drs. Lee and Ramsbotham gave their opinion that there was no proof in this case of breathing having taken place after birth, and that nothing less than breathing could establish the fact of live birth! The child, therefore, in their judgment, was not born alive. According to them a child must breathe before it can be said to possess independent life. The Vice-

Chancellor decided that proof of breathing was not necessary, and held that there was sufficient legal evidence of life after birth in the pulsation observed by the accoucheur. This decision is in accordance with law and common sense. Pulsations indicate an action of the heart, as much as motion of the chest indicates an action of the intercostal muscles. Why these gentlemen should have maintained that there was life with contractility of the intercostal muscles, and not with a contractile power of the heart, is not apparent; but that the opinion expressed is not in accordance with facts, is proved by numerous cases hereafter described. (See ATELECTASIS). In one reported instance pulsation was the only clear evidence of life. In some remarks on this case Dr. Anstie comments on the difference of opinion among medical experts in reference to the proofs of live birth. ('The Proofs of Live Birth,' 1861.) He holds with Drs. Lee and Ramsbotham, that no child is born alive unless there is clear and distinct proof that it has breathed after birth—this proof to consist in the discovery of air in the cells of the lungs. 'Nothing could be easier than to secure such proofs, if respiration had really taken place, for it would always be in the power of the accoucheur in attendance to prove from *post-mortem* examination the dilatation of the air-cells of the lungs, and to say whether or not artificial inflation had been employed. If artificial inflation had *not* been employed, there would be no source of fallacy in the evidence from *post-mortem* appearances; and on the other hand if inflation *had* been employed, and the attendants could not swear to any voluntary respiratory effort having been made, and there was no evidence of swallowing, the child might fairly be pronounced still-born.' It appears to have been forgotten that these suits generally take place many years after the birth of the child: in two cases already quoted ten and twenty years elapsed before any question arose in reference to live birth. Such medical evidence as is here described to be necessary, is simply unattainable. Our Courts are obliged to decide these cases from the observations made by the accoucheur or nurses present at the delivery.

There is besides a difficulty in relying upon the suggested proof derivable from the presence of air in the lungs. It is well known, and cases are described under the section of INFANTICIDE, that a child may breathe and die before its body is born. Therefore, unless there are eye-witnesses to testify to the act of visible breathing, the test is not only valueless but fallacious. It would mislead a Court of law. On the other hand children are born and live for many hours in a state of passive existence without visibly breathing, and after death no air is found in the lungs. These are the cases which would be truly pronounced still-born by those who were not present at the birth, although the accoucheur and nurse may have distinctly seen movements of the arms, legs, or lips, or even a convulsed state of the body! Many cases of this kind are described in the chapters on INFANTICIDE; such cases of life without respiration have been thought to form a serious obstacle to any inference from experiments on the lungs.

The following case, in which all the facts were accurately observed in reference to the manifestations of signs of life after birth, and the duration of life in a new-born child, clearly proves that the English Courts are correct in relying upon proofs of life, irrespective of breathing or crying. It shows, too, that the decision of Vice-Chancellor Stuart in the case of *Brock* v. *Kelly* was based on sound physiological reasons, and that any other decision would have been unjust. This case occurred to Dr. Seale, U.S. ('Amer. Jour. Med. Sci.' July 1870, p. 278.) He induced labour in a woman by ergot of rye, at about the seventh month of gestation. A large child was born after some difficulty, but it did not make the slightest effort to breathe. There was distinct *pulsation in the cord.* Was this child living or dead? As it had not breathed, according to some accoucheurs, it would be regarded as dead. The pulsation

of the cord would be treated as of no importance, *i.e.* as giving no indication of life after birth. But this child was really born living, a fact proved by what followed. Flagellation and alternate sprinkling with hot and cold water produced a violent spasmodic contraction of the diaphragm, which caused the entire infra-mammary region to be very much depressed. There was no doubt that this was a case of atelectasis pulmonum, or inexpansibility of the lungs, a state which continued for *five minutes* after the birth of the child. The cord was now severed, and about half an ounce of blood was allowed to flow slowly from the fœtal end. The tongue, which had fallen back, was drawn forward. A sudden spirt of a drachm of blood flowed when the constriction was relieved, and the child began to breathe very feebly, and so continued to breathe at long intervals. The heart beat very feebly. The pupils were widely dilated, they did not respond to the influence of a bright light, and the child was suffering from all the symptoms of compression of the brain. This condition lasted one hour, when the child ceased breathing.

According to the evidence of Drs. Lee and Ramsbotham in the case of *Brock* v. *Kelly* (p. 210, ante) this child was born dead, and would have been so pronounced for the first five minutes after birth, the pulsation of the cord and the spasmodic movement of the diaphragm being regarded by them only as indications of uterine life. Yet it is clear that this child was born living—that it lived before the act of breathing, which after all was performed only in the most imperfect manner. To have pronounced it dead within the first five minutes of its birth, and living for an hour afterwards, would have been inconsistent; yet if the slight indications pointed out were not signs of continued life these conclusions would necessarily be drawn, involving a *reductio ad absurdum*. The child would have had no power of inheriting or transmitting property for the first five minutes after its birth because it was dead, and would have acquired this power for the last fifty minutes because it was living! According to the French law a child so living for five minutes or an hour after birth, would be pronounced non-viable and incapable of acquiring or transmitting property.

The facts of this case are sufficient to show that the opinion given by Drs. Lee and Ramsbotham in *Brock* v. *Kelly* is untenable. The medical man and nurse present at the delivery were eye-witnesses not wanting in experience, and they were not likely to mistake a dead for a living child. The pulsation distinctly observed by them in the cord was a fact which showed that the heart of the child was contracting. Could the heart of a dead child pulsate or communicate its pulsations to an umbilical cord? Either the child is living or dead: there is no intermediate stage recognized by law, and they who rely upon breathing only or crying only, as a proof of life, must be prepared to affirm that convulsive movements of the limbs, lips, diaphragm, and body after birth, may take place in a really *dead* child; that they are not indications of any latent vital force, but the accidental results of galvanic or mechanical action in dead muscles!

A healthy full-grown child recently born may make an attempt at inspiration, but the closure of the larynx from convulsions, or some irritant such as the vaginal discharges, meconium, &c., may impede the entry of air into the lungs. The chest in this case is arched, the head thrown back, and there is a convulsive rigidity of the muscular system; the tongue is firmly retracted, especially at its base. Unless the finger of the accoucheur is passed quickly down to the base of the tongue, and the epiglottis raised by pressing it forwards, the child would never inspire, although it might have a perfect capacity to breathe. Dr. Braxton Hicks met with a case of this kind: the air entered the lungs immediately after the above operation, and the child breathed and lived. According to the theories propounded in reference to the cases of *Fish*

v. *Palmer* and *Brock* v. *Kelly*, this child would have been pronounced dead or still-born up to the time at which the accoucheur removed the impediment to its breathing! It has been observed that a respiratory action ensues upon any stoppage of the placental supply to the child, and, moreover, that this may occur in the uterus as well as in the vagina; and it has been remarked that foreign substances, which had been drawn in under these circumstances, may be found in the bronchial tubes. If this be so, then the finding of the natural secretions in the bronchial tubes would not be an absolute proof of respiration having been established: it would merely show that there had been an action of the chest during birth similar to that of inspiration. Still this must be regarded as a living action, and therefore indicative of life in the child.

There is no doubt that the best test to apply to such cases for the determination of *physiological* life is *auscultation*. The beating of the heart, as determined by the ear or the stethoscope, applied even for five consecutive minutes, is an undoubted sign of life, in a physiological sense, whether the child breathes, cries, or moves. M. Bouchut noticed, on one occasion, that this kind of passive life continued in an infant for twenty-three hours after its birth. Feeble but distinct pulsations were heard at long intervals, but there was no motion of the ribs. Attempts at resuscitation were made, but the motions of the heart became more and more feeble, until they entirely ceased. An examination showed that the lungs had not received air. As we take the cessation of the heart's action to be the only certain evidence of death, so the existence of pulsation in the heart or arteries, when clearly perceived by the ear, stethoscope, or finger, is positive evidence of life in a physiological sense. Is this *legal* life? Would the wilful destruction of such a child constitute murder? Would this proof of pulsation without muscular motion, breathing, crying, or any other sign of active life, confer tenancy by courtesy, or transfer an estate by inheritance or survivorship? M. Bouchut justly observes that apparent death succeeding to birth, and characterized by the presence of a beating of the heart and an absence of respiration, is only a diseased condition of the new-born child (see 'Atelectasis,' INFANTICIDE); and, whether it is cured of this or dies, it is living, although it has not breathed; or, as a German jurist remarks,—in these cases, '*Scheintod ist Scheinleben.*' By taking away its right of succession, the law punishes the child and its heirs for a malady with which it is born ('Gaz. des Hôp.' 1855, No. 124; and 'Med. Times and Gaz.' August 19, 1856). They who contend that crying or breathing alone should be taken as a sign of life after birth, would of course pronounce such a child to have been born *dead*, even at the time that they might be listening to the pulsations of its heart! (Casper, 'Klinische Novellen,' 1863, p. 564.) Such pulsations would probably be referred by them to the remains of uterine life.

Vagitus uterinus.—Let us suppose that the evidence of a child having been born alive is stated to be that it was heard to cry—it may be a question for a medical witness, in cross-examination, whether this is to be taken as an absolute proof of live birth. The answer must be in the negative, because a child may cry before its body is entirely born; or there may have been what is called *vagitus uterinus*—a uterine cry after the rupture of the membranes. (See INFANTICIDE.) It is quite certain that a child may breathe without crying, but it cannot cry without breathing; yet neither the crying nor the breathing is an absolute proof that the child was actually born alive. As in all cases of this description there must be eye-witnesses, either professional or not; the evidence will not rest solely upon a mere medical possibility of the occurrence of such a cry before birth; and proof will be required of the crying of the child *after* it was born. The determination of the momentary existence of children after birth is of importance in a legal point of view in reference to the following subject.

TENANCY BY COURTESY.

This signifies, according to Blackstone ('Com.' vol. 2, p. 426), a tenant by the Courts of England. The nature of this tenancy has been already explained. (See the case of *Fish* v. *Palmer*, p. 208, and *Brock* v. *Kelly*, p. 210.) If a married woman possessed of estate die, the estate passes from the husband to her heir-at-law, unless there has been a child born *living* of the marriage, in which case the husband acquires a life-interest in the property. The only defence of this singular custom is that it is of great antiquity. An unsuccessful attempt was made a few years since to substitute for it the reasonable provision that the marriage alone should entitle the husband to a right which he can now only acquire by the fulfilment of certain accidental conditions. Incurable sterility, a protracted labour, deformity in the pelvis of the wife, or the necessary performance of craniotomy on a healthy well-formed child, may, under this custom, lead to an aversion of the inheritance. The tenancy, in contested cases, is generally established or disproved by medical evidence; and the following are the conditions which the law requires in order that the right should exist:—

1. *The child must be born alive.* Cases have been already related, wherein the motion of a lip and a pulsation of the umbilical cord were held to be sufficient proofs of live birth. Some physiologists have objected to these as inadequate proofs of life; and if the question were one of physiology, and not of law, there might be some ground for the objection. In truth, however, the law does not require proof of *active* life in a child, but merely some evidence, however slight, that it has been born living; and the amount of proof to satisfy the purposes of justice, must of course rest with those who are expounders of the law. Rare as these cases are, one has been the subject of two trials (*Llewellyn* v. *Gardiner and others*, Stafford Lent Assizes, 1854; and *Gardiner* v. *Llewellyn*, Stafford Summer Assizes, 1856). This was an action of ejectment brought to try the plaintiff's right to a life-interest in the property of his deceased wife. The plaintiff claimed as tenant by the courtesy of England, and his right depended upon whether his deceased wife had had a child born alive. According to the plaintiff's evidence, his wife had taken a long walk, she being at the time in about the seventh month of her pregnancy (November 1851); and, having been taken ill during the night, she was suddenly delivered of a child, which lived for about a quarter of an hour. He stated that he heard the child cry. The plaintiff immediately fetched his sister, and returned with her to his wife in a few minutes, and she deposed that she heard the child cry twice. This evidence was relied upon as conclusive that the child had been born alive, although it appears on the same evidence to have died before anything could be done towards dressing it. The case for the defendants at the first trial was that the wife was a girl of delicate health and liable to epileptic fits; that when little more than 16, she had been married to the plaintiff, without the consent of her mother; and evidence was given to show the improbability of the child having been born alive, there being reason to believe, from the conduct of the plaintiff and other circumstances, that it never could have had more than a fœtal existence. There had been no medical examination; the body was buried the same day, and, as in the case of still-born children, neither the birth nor the burial was registered. Wightman, J., left it to the jury to say whether the positive evidence given by the plaintiff and his sister had been rebutted by the evidence given for the defendant and the other circumstances of the case. The jury found a verdict in favour of the husband's claim. At the second trial, ordered by the Court of Chancery (Stafford Summer Assizes, 1856), the plaintiff Llewellyn was made *defendant;* and medical and other evidence was adduced to show that the child

could not have reached an age at which it could either breathe or cry. The age was variously assigned at the fourth or fifth month of gestation. The body of the child was not seen by any medical man, and the non-professional witnesses who saw it differed entirely regarding its size and appearance; so that, in fact, the case rested mainly on the credibility of the statements of Lewellyn and his sister. There were no *medical* facts to guide the jury. The late Baron Alderson, in summing up, said the question simply was whether Eliza Bennett, afterwards Eliza Llewellyn, was delivered of a *living* child during the time she was a wife. By what was called the 'Courtesy of England,' a man who married a woman possessed of freehold property would, if she had had a child born alive during the time they were married, be entitled to the property for his life; but if she had not a child born alive he would not be entitled to it; that was one of the absurdities of English law! In directing the jury as to the considerations that should guide them in coming to a conclusion, his lordship said they ought to have reasonable and distinct proof of a child having been born alive when its existence was limited to a few minutes; and if a doubt was left in their minds, they ought not to find in favour of the defendant, because the issue lay with him to prove that the child was born alive. If they had a doubt on the subject, and could not tell whether it was born alive or not, they must find a verdict for the plaintiffs (Gardiner); they could not find for the defendant Llewellyn unless they were satisfied that the child was in a state of life in this world during the time the husband was married to the wife. The verdict of the jury was to the effect that they did not believe the child was born alive: it was, therefore, a reversal of the former verdict.

It has been usually considered that the *crying* of a child, properly attested by disinterested witnesses, is sufficient evidence of live birth. This is, in fact, one of the tests given by Lord Coke. In the section on INFANTICIDE, some cases are related in which new-born children survived birth several hours, but manifested no sign of active life either by crying or in any other mode, and after death there was no air in the lungs. As in cases of infanticide, if the evidence of live birth rests entirely on an examination after death, the absence of air from the lungs will not necessarily show that a child has come into the world dead, nor will the presence of air in these organs prove that it has been born alive, because it may have breathed and died before it was born. The child must be heard to cry, or be seen to breathe, or move, after birth. The fact that the lungs are not distended with air, and that they immediately sink in water, either when entire or when divided into small pieces, is no proof that a child has not breathed and cried during birth and afterwards. (See cases by Dr. Vernon and Dr. Davies. INFANTICIDE.) Although in Dr. Vernon's case the child had only reached the sixth month, it was strong enough to cry; and yet probably, had its history been unknown, some medical experts would have been prepared to swear, from an examination of the lungs, that it must have been born dead, and certainly could not have had the power of uttering a cry! A child born at the fifth month has been known to cry (see LEGITIMACY, *post*); but the state of its lungs is not recorded. In the case of *Gardiner* v. *Llewellyn*, a medical witness who appeared for the plaintiff stated as his belief that a child born at the fifth month could *not breathe*, and if it could not breathe (so as to fill the lungs) it could not cry! This may have been consistent with his experience, but it is not consistent with facts observed by others. One of the greatest difficulties that lawyers have to contend with in getting at medical truth, is this strong disposition on the part of witnesses to act upon a foregone conclusion, and to 'fix' all natural events by an exclusive reference to their individual experience. In *Llewellyn's* case, the only evidence of the child being born alive rested on the testimony of strongly-interested persons, Llewellyn and his sister. The alleged fact on which they

based their case was, that they had heard the child cry; but taking the other evidence in the case, the jury placed no confidence in their statement.

It would be indeed most unsafe as a rule to receive evidence on points of this nature, *i.e.* of breathing, crying, or movements of the limbs of new-born children, except from medical men present at the time, or from persons not interested in the results of the case. In general, medical opinions have been received on these occasions. Nothing would be more easy than to assert that a child at birth cried or moved, and it would be utterly impossible, from an inspection of the body, to disprove these statements.

2. *The child must be born while the mother is living. Cæsarean extraction.*—From this it appears that if a living child were removed from the outlet, or extracted from the uterus by the Cæsarean operation, after the death of the mother, the husband would not be entitled to enjoy his wife's estate, although the child might survive its removal or extraction, and succeed to the estate on attaining its majority. How such a case would be decided in the present day it is difficult to determine; but one instance is quoted by most medico-legal writers from Lord Coke, in which, about three centuries ago, the decision went against the husband, in consequence of the child having been removed from the uterus by the Cæsarean section *after* the death of the wife. In the case of Llewellyn (*suprà*) the late Baron Alderson ruled that the husband could not take the estate unless the child was proved to have been born during the marriage, *i.e.* while the wife was living. Although there is no recent English case in which this question has arisen in reference to the performance of the Cæsarean operation, a case which occurred in France in 1834 will show the points to which medical evidence must be directed on these occasions. In April 1834 a woman named *L'Hotellier*, about eight months pregnant, was seized with convulsions and died. A quarter of an hour after her death Dr. Cabaret extracted the child by the Cæsarean operation. The question was, Was this child a living or a dead child at the time of its removal. Dr. Cabaret, the operator, deposed that he saw its chest and ribs move, that there was pulsation in the umbilical cord, and also at its base after it was cut off, and that on laying his hand on the region of the heart he felt this organ beating. The body was placed in a warm bath, and immediately on immersion the right hand was raised towards the head, and there was a slight respiration. After this the child was motionless. Dr. Cabaret considered that it had breathed, though feebly, and for the space of about five minutes. This testimony was confirmed by several women who were present at the delivery.

On the other hand, a physician swore that the child must have been born dead, since he had been for eleven hours in attendance on the woman previous to her decease, and had felt no motion in the uterus. This witness, however, was not present at the operation for the removal of the child.

Thirty-three days after extraction, the body of the child was exhumed and examined. The lungs were compact, of a reddish-brown colour, and the left was emphysematous. This portion of the lungs, cut into pieces, floated on water. There was meconium in the intestines, but the stomach and urinary bladder were empty.

On this state of facts Velpeau gave his opinion that the child had been born alive; but Orfila, Dubois, and Pelletan said that in their judgment it had not been born alive. Orfila assigned the condition of the lungs to putrefaction, and Dubois considered the pulsation of the cord to prove that extra-uterine life was not established; in other words, that the child had not breathed.

The Court submitted these conflicting opinions to three experts—Drs. Marjolin, Roux, and Marc. According to them the movement of the arm observed by Dr. Cabaret was *mechanical* (not vital), owing to the stimulus of immersion acting on the remains of fœtal *life*! As to respiration, if a child breathed

ever so feebly for five minutes, it is remarkable that it raised no cry, not even those feeble sounds produced when the air penetrates no further than the trachea. Finally, the pulsations of the cord cease as soon as respiration commences. The post-mortem inspection proved nothing in favour of the child having been born alive. The arched state of the chest and the condition of the lungs were due to putrefaction, and not to the act of breathing. From these considerations, and believing that all the indications might be referred to the remains of fœtal life, they gave it as their opinion that this child had not breathed, and consequently (?) had not lived. ('Ann. d'Hyg.' 1838, 1, 98; and Beck's 'Med. Jur.' vol. 1, p. 360.)

Upon the strict rules of English law such a case would not have given rise to any question in reference to the *jus mariti*. The proofs of life in the child after extraction were much stronger than in the case of *Fish* v. *Palmer* (p. 208, *ante*). The evidence of the physician and of the women present at the extraction of the child shows that there was a pulsation of the cord—a visible act of breathing, pulsation of the heart, and the spontaneous movement of an arm when the child was placed in a warm bath. The fact that another physician, who did not see the child extracted, had not perceived any movements in the uterus for some hours before, amounts to nothing against this direct evidence.

The suggestion of the experts that the movement of the arm was mechanical was an evasion of the true question. A really dead body might be put into a warm bath without such a mechanical force being exerted. The stimulus of warm water has no effect on a dead body; but it is quite consistent with the fact of this child being living, that when put into a warm bath there was a movement of a limb and an act of respiration. Under any circumstances, unless the alleged facts were disproved by eye-witnesses, the theoretical opinions of experts should not be allowed to set aside the direct and independent testimony of the operating physician and of the other persons in attendance. According to English law this child would have been pronounced living. Even the referee-experts did not positively say that it was 'born dead.' They somewhat evasively say, 'This child has not lived,' implying by this that it has not breathed perfectly, and has not manifested what they call active extra-uterine life. Further, if it had lived it was a viable child, *i.e.* there was nothing in its conformation to prevent it from continuing to live.

The proofs of life after birth in this case resemble those described in the case of Dr. *Seale* (p. 211, *ante*). In that case there was pulsation of the cord, and a spasmodic movement of the diaphragm on the child being placed in warm water. That in Dr. Seale's case the child was living there could be no doubt, and the same indicia would fully justify the conclusion of Velpeau, that the child removed by the Cæsarean operation was also living. The majority of experts were, it is true, in favour of the view that the child was not born living; but in this, as in all other medico-legal cases, *testimonia non sunt numeranda sed ponderanda.*

The Cæsarean operation has rarely been performed in England, except when a woman was actually dying or dead. Dr. Goodman, of Manchester, collected and published, from the table of Dr. Merriman and other sources, an account of thirty-eight of these operations performed in this country since 1737. It appears that out of this number only three mothers recovered, the children, with one exception in the three cases, having died. In eighteen cases the children were extracted living. ('Obstetric Record,' No. 4, 1848, p. 3.) Dr. Goodman himself performed this operation successfully on a woman in November 1845. This child was extracted alive, and the woman perfectly recovered from the operation. ('Med. Gaz.' vol. 36, p. 1392.) Other cases are reported in which the child was extracted living, but in which the operation was fatal to the woman. ('Lancet,' 1872, 2, 523.) In a recent case, how-

ever, it proved successful to the woman and child ('Lancet,' 1873, 1, 180); and in another, successful so far as the woman was concerned, but the child was extracted dead. In this case the child had not been felt to move for twenty-four hours. ('Lancet,' 1872, 1, 753.) In a case reported by Dr. Hicks, the operation was carefully performed a fortnight before the full term, but the woman, in spite of every care, died on the fourth day. The child, when removed after some little trouble, breathed, and became a vigorous infant. It died of thrush at the end of a month. ('Obstetrical Transactions,' vol. 10, p. 47, 1869.)

The husband or representative of the deceased parturient woman may object to the performance of this operation, even although the child may be living in the womb, and there may be a reasonable hope, by an immediate operation, of extracting it living. The late Dr. Lever informed me that on two occasions, in 1858, the husbands thus refused to allow him to operate on the dead body of the wife. I apprehend that no medical man would proceed to operate by force, or against the will of the husband; at the same time, in refusing his permission, the husband is not guilty of any legal offence. The practice on the Continent has been to undertake it while the woman was living, and the result has shown that, in a large number of cases, it may thus be performed successfully, both with regard to mother and child. (See 'Med. Gaz.' vol. 19, pp. 822, 878; Cormack's 'Monthly Journal,' July 1845, pp. 541–543.) For a case in which this operation was successfully performed three times on the same person, see 'Brit. and For. Med. Rev.' July 1836, p. 270.

Important legal consequences may hereafter ensue from a more general adoption of this practice in England in respect to deformed women. Thus, supposing in any case a child were removed alive while the mother was living, both of them dying shortly afterwards, Would the husband become a tenant by courtesy? The law says that the child must be *born*; and some lawyers would find ground for arguing whether extraction by the Cæsarean operation should be regarded as 'legal birth.' 'Illud autem valdè controversum est inter jurisconsultos, an is qui editus est, exsecto matris ventre, reputetur partus naturalis et legitimus et successionis capax.' (Caranza.) According to Fonblanque, the question is settled in the affirmative—a child extracted is a child born. ('Med. Jur.' vol. 1, p. 236.) Our ancient law-authorities do not appear to have contemplated that such an operation would ever be undertaken on a living woman. The words of Lord Coke, which are considered to express the state of the English law, are, 'If a woman seised of lands in fee taketh husband, and by him is bigge with child, and in her travell dyeth, and the child is ripped out of her body alive, yet shall he not be tenant by the curtesie, because the child was not born during the marriage, *nor in the life of the wife*, but in the meantime her land descended.' According to other authorities, the Cæsarean operation does not divert the course of descent, or divest the husband of the life-estate, provided the child be born alive, and the mother was living when the child was born. ('Obstetric Record,' vol. 3, p. 66. *Birth*, and extraction by the Cæsarean operation, are, therefore, treated as similar conditions.

As a proof that this operation is not always necessary, even when circumstances may appear to call for it, the following case, mentioned by the late Sir B. Brodie as having occurred in a French hospital, is of some interest. It is that of a woman whose pelvis was considered to be too narrow for the egress of the child. As she was at the full term of gestation, the Cæsarean section was proposed; but before the operators were ready to commence, the child was expelled by the natural efforts of the uterus, or, as Sir Benjamin quaintly expressed it, 'the child preferred coming into the world by the old road!'

('Lancet,' Dec. 1853.) This, however, is not the only case of the kind on record. There is great reason to believe that Continental practitioners are too officious in suggesting the performance of this operation, and that it is often undertaken to the serious risk of the life of a woman, when the case, if left to nature, would have done well. A case is reported to have occurred in Scotland in 1847, in which the Cæsarean operation was considered by several practitioners of experience, including the late Sir J. Simpson, to be the only means by which delivery could be accomplished. Fortunately for the woman, the labour was somewhat rapid, and she was delivered of a dead child, weighing about three pounds, before the arrival of those who were to perform the operation. (Ed. 'Monthly Journ.' July 1847, p. 30.) The fact is, on these occasions, nature often adapts means to ends in a most unexpected manner.

A case of the performance of this operation on a living woman has been reported by Mr. Skey. Here sufficient time was allowed for the advancement of the labour, and it was evident to all that delivery could not take place by the outlet; that embryotomy could not be performed; and that, unless the operation was resorted to, the female would infallibly sink from exhaustion. The child was extracted, but the mother died in about thirty-six hours. ('Med. Gaz.' vol. 39, p. 212.)

Medical jurists have differed respecting the period of gestation at which the operation should be performed. This would of course depend on the earliest period at which a child might be born capable of living. In reference to tenancy by courtesy, a child might be extracted alive as early as the fifth month, but it would not be likely to survive unless it was at or about the seventh month. When a woman dies undelivered, it is difficult to say for how long a period the child may survive in the uterus. It has been stated that a child might thus continue to live for many hours, but this is not borne out by any facts, and the physician who makes the suggestion admits that no time should be lost in removing the fœtus. In the French case above quoted, p. 216, the child was removed alive a quarter of an hour after the death of the woman. Dr. Madge operated in a case of convulsions *twenty minutes* after the death of the woman, but the child was then dead. There were no signs of uterine action after the mother's death. ('Amer. Jour. Med. Sci.' July 1872, p. 585.) Some have alleged, that unless the operation is performed *immediately* after the death of the woman, the child would not be extracted living. The condition of the fœtus in utero is, however, peculiar, and quite distinct from that of a child living by the act of respiration. It is possible, therefore, that there may be a limited survivorship, and that the operation may be performed so late as an hour after the death of the woman with the possibility of extracting a living child. There are incredible accounts of children having been extracted living, many hours after the death of the mother. Dr. Kergaradec states that this happened in the case of the Princess Pauline of Schwartzenburg, who, while pregnant, was burnt to death at a ball given on the occasion of the marriage of the Empress Maria Louisa in 1810. The body was not examined until the following day, and the fœtus is stated to have been then found living! ('Ann. d'Hyg.' 1846, 1, 454.) The reader will find a full account of the medico-legal applications of this subject by Dr. N. Berg in Casper's 'Vierteljahrsschrift' for 1863, p. 219.

Craniotomy.—Under this condition it is necessary to destroy the child to effect delivery, which otherwise could not take place without leading probably to the death of the woman. This operation would not give rise to any medico-legal question, except in a case in which the child had not been completely destroyed before entire delivery. Craniotomy, as the name implies, consists in cutting through the cranium and destroying or removing the brain of the child. If with the brain the upper part of the spinal marrow is also destroyed,

the child comes into the world dead. Under other circumstances there may be movements of the limbs or body after delivery. (See case by Dr. Hicks, 'Guy's Hosp. Rep.' 1860, p. 477.) The existence of these, properly attested by the accoucheur, might furnish important evidence in cases of tenancy by courtesy, contested inheritance, or succession to property. It would be for the Court to decide, under the proved medical facts, whether the child had manifested any signs of life, in a legal sense, after its entire delivery from the body of the mother, and while she was yet alive.

Birth of the child after the death of the woman.—The *post-mortem* birth of a dead child can give rise to no question in connection with tenancy by courtesy. This part of the subject has been elsewhere further considered (vol. 1, p. 95); also under DELIVERY (*ante*, p. 165). But it may happen that the child is born after the death of the woman, and survives its birth, as in the following case. A woman died during labour. The accoucheur who was summoned found the head of the child presenting, but too high up in the pelvis to allow of the application of the forceps to aid delivery. He immediately introduced his hand into the uterus, and a quarter of an hour after the death of the mother, and twenty hours after the rupture of the membranes, he extracted a male infant in a state of apparent death. The child, which was well formed, was speedily resuscitated by the application of the ordinary means. ('Berlin Medicin. Zeit.' July 1836.) Had this case occurred in England, it would probably have been decided, according to the old precedent, that the husband could not become a tenant by courtesy, because by the death of the mother the marriage was dissolved, and the land had descended before the child was born! Another case of the birth of a living child after the death of the woman will be found recorded in the 'Medical Gazette,' vol. 46, p. 713; and a third, in which a dead child with the placenta was expelled from the uterus many hours after death, is reported in Casper's 'Vierteljahrsschrift,' 1861, 1, 186.

3. *The child must be born capable of inheriting. Monstrosity.*—If the woman is delivered of a monster, which cannot inherit, the husband does not acquire a right of tenancy.

MONSTERS.

The connection of teratology or monstrosity with medical jurisprudence has been most ably investigated by M. St.-Hilaire. Although legal questions connected with monstrous births do not often occur, yet it is proper that a medical witness should be acquainted with certain facts respecting them. The law of England has given no precise definition of what is intended by a *monster*. According to Lord Coke, it is a being 'which hath not the shape of mankind; such a being cannot be heir to or inherit land, although brought forth within marriage.' A mere deformity in any part of the body, such as supernumerary fingers or toes, twisted or deformed limbs, will not constitute a monster in law, so far as the succession to property is concerned, provided the being still have '*human shape*.' Even a supernumerary leg would not probably be allowed to avert an inheritance! A trisceles monster, in which the third leg was a fusion of two legs, was exhibited in London in 1846. (See 'Med. Gaz.' vol. 37, p. 619.) From Lord Coke's description it is obvious that the law will be guided in its decision by the description of the monstrous birth given by a medical witness. It would not rest with a witness to say whether the being was or was not a monster—the Court would draw its inference from the description given by him. Various classifications of monsters have been made, but these are of no assistance whatever to a medical jurist, because each case must be decided by the peculiarities attending it; and his duty will not be to state the class and order of the monster, but simply in what respect it differs from a *normal* human being. In consequence of the want of a sufficient number of

precedents on this subject, it is difficult to say what degree of monstrosity would be required in law in order to cut off the civil rights of a being. Monsters may be acephalous (headless), dicephalous (two heads with one body), or disomatous (two bodies with one head). Others again, like the Siamese twins, may have two distinct bodies united by a broad band of skin. Would an acephalous monster be considered as devoid of human shape? Would a disomatous monster be allowed to inherit as one?—to marry as one?—or how would legal punishment be inflicted in the event of one of the bodies infringing the laws? Such are the singular questions which have been propounded by medical casuists in relation to these beings; and there is obviously ample room for the exercise of much legal ingenuity in respect to these questions. According to St.-Hilaire, the rule which has been followed in all countries respecting these monstrosities is to consider every monster, with two equally developed heads, whether it be disomatous or not, as two beings; and every monster with a single head, under the same circumstances, as a single being. He ascribes the origin of this rule to the performance of the rite of baptism in all Christian countries upon each head, when the monster is dicephalous. This view appears rational when we consider that with two heads there are two moral individualities; while with a single head, there is one will and one moral individuality. But it is doubtful how far this doctrine would be accepted by jurists and legislators. The question whether, in a dicephalo-disomatous monster, the two beings would be bound by the act of one, either in civil or criminal jurisprudence, is a matter which, if these monstrosities were more frequent, would give rise to serious difficulties. Such a question is not purely speculative, because it might easily have been raised in respect to the Siamese twins during their stay in this country. According to St.-Hilaire a case of this kind was actually decided in Paris in the seventeenth century, in relation to a double-headed monster. This author states that a double monster killed a man by stabbing him with a knife. The being was condemned to death, but was not executed on account of the innocence of one of its competent halves! ('Ann. d'Hyg.' 1837, 1, 331.) According to the same authority, compound monstrosity is not transmissible by generation.

The reader will find an account of the most remarkable monsters born during the present century in a paper by Dr. Rüttel (Henke 'Zeitschrift der S. A.' 1844, p. 229.) Among them is mentioned a tricephalous (or three-headed) monster, born living in Paris in 1830. Each head was baptized under a separate name. Monsters, especially the dicephalous or two-headed variety, are either born dead or die soon after birth.

The varieties of monsters are very numerous. In the Museum of Guy's Hospital there is a large collection—some with two heads and one body, others with two bodies and one head. Dr. Phillips has recently described one of these productions, in which the head and neck only are double. It had all the appearance of a mature fœtus. Both heads were covered with thick hair, and each was as large as that of a fœtus at full time. The faces were similar, and directed forward. There was nothing specially noticeable about the external form of the chest or abdomen. The navel-string was single and central in position. The genital organs were single and of the male sex. The testicles had descended into the scrotum. The upper limbs were natural and of full size. There were three lower limbs, two joined to the body in the usual way and one ill-formed and rudimentary. (Guy's Hosp. Reports, 1870, 1 457.)

This monster was born in August 1870. In order to accomplish delivery, it was found necessary to cut off one head which had already passed the outlet, before the other could be delivered!

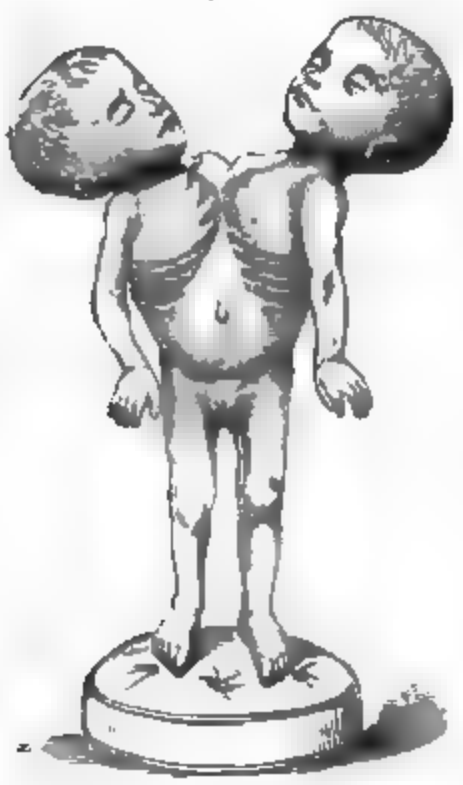
Mr. Dalton found on dissection that each head had a distinct spinal column. In the chest there was one heart and four lungs. In the abdomen there were

two stomachs and one intestinal canal, partly single and partly double. There were other anatomical peculiarities showing that the abnormal conditions existed internally as well as externally. A drawing of this monster is appended to the paper. It has 'human shape,' but of a duplex character, resembling two children blended into one.

For other cases of duplex monsters, which appear to have been rather frequent of late, the reader is referred to the 'Lancet' (1872, 1, 465, 538, and 563). The 'Obstetric Transactions' contain also many accounts of recent monsters, with illustrations. In general they were born dead, or died during delivery, or, as in the above case, from the result of operations required for their extraction. It is a curious fact that when a woman is pregnant with twins one may be a monster and the other a well-developed child. Dr. Gervis met with a case of this kind ('Obstet. Trans.' 1869, vol. 10, p. 113; Ed. 'Med. Jour.' vol. 55, pp. 76, 435.) There is a traditional superstition that this malformation or monstrosity of offspring arises from mental emotions of the mother during pregnancy. Dr. Fisher, who has collected a number of facts on the subject, affirms that there is no reasonable ground for this popular opinion. The instances related in support of it are in his view simply accidental coincidences, and these are neither sufficiently numerous nor authentic to justify the theory that monstrosity of the offspring is in any way caused by the mental emotions of a pregnant woman. On the contrary all vices of conformation and monstrosity are due to retarded, arrested, or excessive development. ('Amer. Jour.' April 1870, p. 575.)

Among the monsters which have attracted attention in this country during the present century there are three which require a short notice. The first is *Christina Ritta*, born in Sardinia in 1829. The parents were well formed, and the mother had already borne eight normal children. This monster was double from the head to the pelvis, the two vertebral columns being distinct as far as the os coccygis. The left bust was christened by the name of Christina, the right by that of Ritta. The monster was brought to Paris, where it died about *nine months* after its birth. An excellent cast of it may be seen in the Museum of Guy's Hospital. The annexed engraving of this monster, Fig. 151, is from a photograph of the plaster cast. In the further description of it, it may be observed, that below the pelvis the monster is single. There are two heads, resting on two necks; and the union or fusion of the two busts is effected laterally towards the middle portion of the chest, so that the two corresponding breasts are almost blended. The abdomen, as well as the pelvis, evidently formed by the junction of two primitive pelves, is single. In the chest there were found two distinct sets of lungs and two hearts; but these were enclosed in a single bag or membrane (pericardium.) During life the pulsations of these organs were so uniform that there was considered to be a single heart. There was only one diaphragm—a fact which accounted for the simultaneous death of both bodies, one only having been previously indisposed.

Fig. 151.



The two-headed female monster, Christina Ritta.

The *Siamese twins*, *Chang* and *Eng*, may be regarded as forming the most remarkable duplex monster of modern times. They were born in 1811, and appeared first in this country in 1830, and afterwards in

1869. They are united by a broad thick band, extending from the lower part of one chest-bone to the other (cartilago ensiformis). The band is four inches in length and seven inches in circumference. The nerves and blood-vessels of each meet in the centre of it, but there is no direct blood-communication between the two. There are two distinct hearts, the pulses having been observed to differ in frequency and character. The respiration is wholly independent in each. Their mental operations are entirely distinct, and they have been known to differ in opinion on the question of bathing, &c. In short they are really two distinct men, with the misfortune of having this connecting band between them. When I saw them and conversed with them as youths in 1830, there was such a remarkable resemblance in the features that it was impossible to distinguish one from the other, except by remembering their position on the right or left hand. They had distinct volitions, and conversed with a friend and myself on different subjects at the same time. Their movements were easy and simultaneous, so as to appear like those of a single being. At this time when either coughed the band swelled up in its whole length, thus rendering it probable that there was only one peritoneal cavity between them.

Under the circumstances mentioned, it would have been impossible in relation to civil and criminal jurisprudence to make both responsible for the acts of one. Living for forty years in America, they exercised the rights of citizenship as independent persons, and had married two sisters, entering into the contract as separate beings. No charge of bigamy was raised against them for this double union. It is clear, from this independence of will and action, that one might kill a person under circumstances which would constitute murder or manslaughter, the other not being an assenting party, and endeavouring to prevent the perpetration of the crime. The application of the criminal law would, as in the Parisian case related by St.-Hilaire, become a subject of great difficulty. No punishment could be inflicted on the guilty without necessarily involving the innocent (undivided) moiety. Such cases of monstrosity must be regarded as setting at defiance all the ordinary rules of law, whether civil, criminal, or canonical. Another duplex monster, *Millie* and *Christine*, was exhibited in London in 1871. (See 'Lancet,' 1871, 1, 725.) Like the Siamese twins they were two independent beings, females, united by a band extending from one os coccygis to the other. They were in all respects independent in thought and action.

Malpositions, transpositions, or defects of the internal organs of any of the cavities, do not form monstrous births within the meaning of the English law. The legal question relates only to *external* shape, not to *internal* conformation. It is well known that many internally malformed persons live to a great age; and it is not until after death that malpositions and defects of this kind are discovered. In French jurisprudence the case appears to be different; if the malposition or defect was such as to become a cause of death soon after birth, the child would be pronounced not '*viable*,' and therefore incapable of acquiring civil rights. One test of monstrosity has been based on the viability of offspring. According to some authorities a monster implies such a malformed being that the child would be pronounced non-viable, *i.e.* incapable of continuing to live after it was born. (Horn's 'Vierteljahrsschrift,' 1865, 2, 264.) Some medical jurists have discussed the question of '*viability*' in new-born children, *i.e.* their healthy organization, with a capacity to continue to live, as if it were part of the jurisprudence of this country; but I am not aware of any facts which bear out this view. The English law does not regard *internal* monstrosity as forming a bar to civil rights; and the cases of *Fish* v. *Palmer*, of *Brock* v. *Kelly* (1861), and of *Llewellyn* v. *Gardiner* (*ante*, pp. 208, 210, and 214), show clearly that the simple question in English jurisprudence is, not whether a child is or is not '*viable*,' but whether it has manifested any distinct

sign of life after it was entirely born. The French law is much more complex, and throws a much greater degree of responsibility on French medical jurists. (See *Viability, post.*) It is proper to state that no person is justified in destroying a monster at birth.

There are some other legal conditions which are required to be fulfilled in order to establish a tenancy by courtesy, but I have confined these remarks chiefly to that which may become matter for medical evidence. Admitting that there are legal proceedings by which the obnoxious parts of this ancient custom may be set aside during the life of the wife, it is hardly just that the knowledge of the necessity for these precautions should be left to be acquired by accident. It would be better to abolish tenancy by courtesy altogether, than to allow the succession of a husband to his wife's estates to rest upon a casualty of this kind.

CHAPTER 66.

PLURAL BIRTHS — SUPERFŒTATION — SUPERCONCEPTION — SUPPOSITITIOUS CHILDREN — AGE — MINORITY AND MAJORITY — RESPONSIBILITY FOR CRIMES AND FOR CIVIL ACTS.

Plural births.—This has been regarded as a subject appertaining to medical jurisprudence; but I am not aware that there is any case on record in which the evidence of a medical man has been required respecting it. It is a simple question of primogeniture, which has been generally settled by the aid of depositions or declarations of old relations or servants present at the birth. Of course in the absence of eye-witnesses the question of priority of birth must be a matter of conjecture. It cannot be determined by the size of the child. Women may have two, three, four, or five children at a birth. Twins are comparatively frequent, but triplets and quadruplets are very rare. A case of triplets is reported in the 'Lancet' for October 1853, p. 316. Dr. Crooks, of Philadelphia, met with a case in which a woman, labouring under dropsy, was delivered at the eighth month of three children, at intervals of fifteen minutes. They were contained in separate sacs, and connected with one placenta. There were two males and one female. The first two weighed about seven pounds, the second six pounds. One died within forty-eight hours, and the other survived a fortnight. ('Amer. Jour. Med. Sci.' Jan. 1868, p. 279.) In the same journal (Oct. 1861, p. 576) a case of triplets is described by Dr. Pittinags. The expulsion of the children and placentæ did not occupy more than twenty minutes. There were two boys and a girl, and two placentæ. Dr. Routh met with a case of triplets in 1867, of which he has given a report. ('Trans. of Obstetric Society,' vol. 9, p. 156.) Dr. Martyr has contributed another, in which the three children were of the size of a small seven-months child. The first and last were males. They all died within twenty-four hours, but lived long enough to give rise to a question of primogeniture. ('Obstet. Trans.' vol. 11, p. 208, 1870; see also another instance by Dr. Hogg, 'Lancet,' 1872, 2, 67.)

According to Dr. Rüttel, out of 574,293 births in the kingdom of Prussia in 1840, there were 6,381 cases of twins, 72 of triplets, and 1 of quadruplets. This writer knew an instance in which a woman had *six* children at a birth. (Henke, 'Zeitsch.' 1844, p. 226; and 'Med. Gaz.' vol. 36, p. 607.) Mr. Guthrie states that in the Museum of the Royal College of Surgeons 'there is

a large bottle containing five young ladies and gentlemen, all brought forth at one birth, and destroyed by an accident;' and he also says that he was for many years acquainted with a gentleman whose mother produced twenty-eight living children in the first twelve years of her married life. ('Lancet,' February 15, 1851, p. 176.) Mr. Russell met with a case, in 1849, in which there were five children at a birth. They were all males, and all born dead. The largest was six inches and the smallest was five inches long. They were prematurely born. There was one placenta of the ordinary size, with five umbilical cords attached to it round its centre. ('Lancet,' February 3, 1849.) Mr. Young states that he attended a woman who was delivered of four male children at one birth, three being from seven to eight months: they survived to the following day. One of the four was a fœtus of from fifty to sixty days, apparently showing conception at different periods. There was one placenta with four navel-strings quite distinct. ('Lancet,' March 1, 1856, p. 234.) Mr. Black, of Anstruther, has reported the case of a woman who was delivered on the 30th of June 1845, of four children, two males and two females. Three of the children weighed nearly four-and-a-half pounds each. They were alive and thriving on the 12th February following. ('Northern Journal of Medicine,' March 1845, p. 265.) The only circumstance with respect to these plural births which it has been recommended that an accoucheur should attend to, is the order of their occurrence, and whether any or all of them manifest signs of life after birth. The first-born male child, according to an ancient principle of the common-law of this country, succeeds to the inheritance. In cases of twin or triplet males, a practitioner would find himself much embarrassed, after the lapse of a certain period, to express an opinion as to which was first born, unless there was some personal peculiarity or deformity which would at once enable him to stamp the identity of a child.

SUPERFŒTATION.

Most medico-legal writers, in treating legitimacy of offspring, have considered it necessary to introduce the subject of superfœtation. By this we are to understand that a second conception may at any time follow the first, and that gestation may go on to its full period in each instance independently of the other: so that if a woman were impregnated when in the third month of gestation, she would bear the first child mature at nine months, and the second child, also mature, at the end of twelve months after the first conception. This subject has been said to involve 'not only the conjugal fidelity of a wife, but the disposition of property, and much of the comfort and happiness of society.' Its importance to a medical jurist appears to me to have been here considerably exaggerated. So far as I have been able to ascertain, not only is there no legal case involving this question to be met with in the judicial records of this country, but none in reference to this state is ever likely to occur which would create the least practical difficulty. If we admit that a woman may, during marriage, present such a deviation from the common course of nature, as to produce two perfectly mature and fully-developed children, the one three or four months after the other, how can such an event be any imputation on her fidelity? Superfœtation, if it occur at all, may occur as readily in married life, during connubial intercourse, as among unmarried women. The following appears to be the only possible case wherein a medical opinion might be required respecting this alleged phenomenon. A married woman, six months after the absence or death of her first husband, gives birth to an apparently mature child that dies: three months afterwards, and nine months after the absence or death of her husband, she may allege that she has given birth to another child, also mature. A medical question may arise,

whether two mature children could be so born, that the birth of one should follow three months after the birth of the other; or whether this might not be a case, by no means uncommon, of twin-children—the one being born prematurely, and the other at the full period. (For a case of this kind, at two months' interval, see 'Med. Gaz.' vol. 37, p. 27; for another, at eight days' interval, see the same journal, vol. 47, p. 227; and for a third, at thirty-two days' interval, 'Am. Jour. Med. Sci.,' April 1845, p. 503.) Mr. Brown has more recently published a case in which abortion of one fœtus occurred at the third month, while the other attained the full period. ('Assoc. Medical Journal,' November 11, 1853, p. 997.)

Admitting that both the children when born were mature, and therefore that it was a case of superfœtation, the first delivery must have taken place in the presence of witnesses, and it would then have been known whether another child remained in the uterus or not. If the two children were born within the common period of gestation after the absence or death of the husband, then their legitimacy would be presumed, until the fact of non-access was clearly established. The mere circumstance of their being apparently mature, and born at different periods, would *per se* furnish no evidence of their illegitimacy. On the other hand, if one or both of them were born out of the ordinary period, then, according to the evidence given, they might or might not be pronounced illegitimate. The law therefore appears to have no sort of cognizance of the subject of superfœtation, as such: it is generally merged in the question of protracted gestation, which will be hereafter considered.

Whether superfœtation can really take place or not, is a question which has given rise to much controversy. That one conception may follow another within a certain period, and that twins may thus be the result of two distinct conceptions, is a probable occurrence. This, indeed, is what may be termed *superconception* or *superimpregnation*. But when gestation has already gone to the second month, it has been hitherto considered highly improbable that there should be a second conception. In two cases, however, in which two men had intercourse with women within the period of seventeen and eight days respectively—cases favourable to superconception,—there was, in each case, only one child, and the paternity was actually disputed. (See *post*, PATERNITY.) According to Donné, there is a limit to this power of superconception. He has found that the mucus secreted from the vagina of pregnant females is, by reason of its great acidity, completely destructive of the existence of the spermatozoa, and therefore renders the spermatic fluid unprolific. (See *post*, STERILITY.) It does not appear, however, that the vaginal mucus becomes more acid in the pregnant state; but, according to Mr. Whitehead, the effect is due to this acid secretion not being partially neutralized, as in the unimpregnated state, by the alkaline mucous secretion of the uterus. ('On Abortion,' p. 406.) At what period of pregnancy the vaginal mucus begins to act destructively on the spermatozoa has not yet been determined; further researches are required to determine this point.

In a paper published in the 'Association Journal' (May 6, 1853, p. 398), Dr. Duncan, referring to the occurrence of menstruation during the early months of pregnancy, considers that he has obtained anatomical proofs that this discharge may take place from the inner surface of the uterus after impregnation, and up to the *third* month of gestation. He believes that during this period superconception may occur, and that this will satisfactorily account for all the cases of superfœtation which are on record. We may suppose that the first child is born prematurely, but within the limits of viability: we thus gain two months; and if impregnation may take place between two and three months after one conception, we may thus have four or five months' interval between the births of successive viable infants. It is not therefore necessary

to suppose that they have both been conceived at the same time. Until the mouth of the uterus is completely closed as a result of the development of an embryo, it is possible that conception may take place from intercourse subsequently to a previous conception. The exact period at which this closure occurs has not been determined; but according to Dr. Duncan the menstrual secretion may find its way through the mouth of the uterus for at least *two months* and probably three months after conception. If this be the case, a second conception might occur two or three months after a first conception; but I am not aware of any facts to support this statement. It cannot be denied that superconception may occur in cases in which two separate intercourses have been had within a few days of each other: and, according to some, twins may be generally regarded as the result of this double conception at different periods. (Ramsbotham's 'Obstet. Med.' p. 500.)

Dr. Carter has reported the following case in the 'Philadelphia Medical Examiner':—A negro woman, quite black, æt. 23, and of good constitution, had borne three children previously to her last labour. She stated that in April 1848 she had had connection with a white man, and on the following day with a black man. This was about a week or ten days before the cessation of the menses. In the middle of February 1849 she was delivered of twins, one of the children (the firstborn) being as dark as negro children generally are, while the other was a mulatto. The woman believed that they were begotten by different fathers; and this was rendered highly probable by the difference in the colour of the skin. ('Edin. Month. Jour.' May 1850, p. 485: see *ante*, p. 842.) The reader will find several cases of a similar kind reported by Dr. Ramsbotham (op. cit. p. 501.)

Many of the old cases of superfœtation are explicable on the supposition that a woman was pregnant with twins, and that one of these was born prematurely, and the other at the full time or later. The following, reported by Dr. Möbus, of Dieburg (Henke's 'Zeitschrift der S.A.' 1837), will serve as an illustration:—A healthy *married* woman, about thirty-five years of age, was safely delivered of a girl on the 16th of October, 1833. This child is described as having been well formed, and having borne about it all the signs of maturity. The woman, it is to be observed, had previously had several children in a regular manner. Soon after her delivery and the expulsion of the placenta, she felt, on this occasion something still moving within her. On examination, the mouth of the uterus was found completely contracted, and the organ itself so drawn up as to render it difficult to be reached: but the motions of a second child were still plainly distinguishable through the parietes of the distended abdomen. Her delivery was not followed by the appearance of the discharges (lochia), or by the secretion of milk. The breasts remained flaccid, and there was no fever. On the 18th of November, *thirty-three* days after her first confinement, this woman, while alone and unassisted, was suddenly delivered of another girl, which, according to Dr. Möbus, was healthy, and bore no signs of *over-maturity* about it. The reporter alleges that this case most unequivocally establishes the doctrine of superfœtation. The two births took place at an interval of *thirty-three* days, and the two children were, it is stated, when born, equally well-formed and mature: but Dr. Möbus did not see the second child until twenty-four hours after birth. This may, however, have been a twin-case, in which one child was born before the other. Dr. Möbus considers that the first child was born at the usual period of gestation, it being described as mature; and the other, thirty-three days after that period, having been, in his view, conceived so many days later than the first child. If, however, we imagine that in this, as it often happens in twin-cases, one twin was more developed than the other, and that the more developed was the first expelled; or that it is not always easy to compare the

degree of development in two children, when one is born before the other and they are not seen together, we shall have an explanation of the facts, without resorting to the hypothesis of a second conception after so long an interval. As to the signs of *over-maturity* alluded to, they are not met with. If we are to believe authentic reports, a child born at the thirty-ninth week cannot be distinguished from one born at the forty-third or forty-fourth week (see *post*, LEGITIMACY), and children born at the full period vary much in size and weight. A longer time may be required to bring children to maturity in some women than in others; and in a woman with twins it is well known that two children may arrive at the same degree of maturity within different periods, one requiring, perhaps, several weeks longer than the other for its full development.

Cases of abortion or delivery of one twin, the other remaining in the uterus, are by no means uncommon. In addition to those already quoted, two are referred to in the 'Edinburgh Medical and Surgical Journal' (1839, p. 289). In one, abortion took place at three months, while the woman went to her full time and was delivered of a healthy child at nine months. In the second, one fœtus was expelled at about four-and-a-half months, while four months afterwards a full-grown child was born. In a third case, reported by Dr. Nevins, a woman was delivered of a fœtus, prematurely; and six weeks afterwards she was delivered of a full-grown child. ('Med. Gaz.' vol. 46, p. 983; see also 'Med. Times and Gaz.' May 2, 1857.) Even under a malformation which might be supposed to be favourable to its occurrence, namely, the presence of a bilocular uterus, it has been found that impregnation has taken place in one cornu only. (See 'Med. Gaz.' vol. 19, p. 507.) A singular instance is, however, recorded in the same journal (vol. 20, p. 508), where a woman, six months after marriage, bore a four-months' child, and forty weeks after marriage gave birth to mature twins. On examination, the uterus and vagina were both found double, and each vagina had a separate orifice. Dr. Horlbeck, U.S., states that he met with a case in which a well-grown fœtus of six months was simultaneously expelled with an embryo about six weeks old! ('Med. Gaz.' vol. 44, p. 87.) In the 'Medical Times' (Jan 31, 1852, p. 104), Dr. Foley has published the account of a case in which a mole was expelled from the uterus at an early period of pregnancy, while the woman was delivered, about the usual period, of a living and well-formed although weakly child, which survived its birth three days. (See also 'Dublin Quarterly Journal,' Feb. 1859, p. 221; and 'Lancet,' August 2, 1862.) M. Garimond has contributed a case of the ordinary kind, in which a woman was delivered of one child fully developed, and of another at seven months, dating from the last menstruation. ('Ann. d'Hyg.' 1867, 1, 456.) This may have been simply a case of twins, impregnation taking place at the same time, but one twin less developed than the other.

Dr. Paxton, of Kilmarnock, met with a case in which a question of infanticide arose out of the supposed condition of superfœtation. ('Glasgow Medical Journal,' Jan. 1866.) A maid-servant, æt. 20, was delivered in secrecy. When questioned she denied that she had been pregnant. On examination, however, the appearances were all those of recent delivery. The uterus was felt as high as the umbilicus. At the time of examination there was no lochial discharge. The medical opinion given was that she had been delivered within three days. She now changed her line of defence, and stated that she had not only been pregnant, but still was so. Another examination showed that this was correct. The presence of a fœtus in the uterus was proved not only by the ballottement, but by the placental murmur, and the uterus was found to be larger than at the former examination. On the other hand, the fact that she had been delivered twelve days before was proved at the first examination by the relaxed state of the vagina, the open orifice of the uterus, the enlarge-

ment of the mammæ, the great loss of blood, with a copious secretion of milk, the abundant lochial discharge, and the subsequent marked diminution of her abdomen. These facts were only reconcilable with the delivery of a child or some product of conception, and were not consistent with merely a threatened abortion of a fœtus then in the uterus. In reference to a previous delivery, neither child nor placenta could be discovered; but the woman admitted to a fellow-servant that she had disposed of the body. After the lapse of three months she gave birth to a stout healthy child. This woman had had intercourse with two men; and Dr. Paxton regarded the case as one of superfœtation, or a twin conception. She was charged with the murder of the child of which she had been first delivered, but as the body was not forthcoming there was no evidence to establish the crime. Owing to this there was a failure of proof to show that one child had been born mature three months before the other. The first delivery might have been the body of an aborted immature twin, or of a blighted ovum. (See also a case by Dr. Ramsbotham, 'Med. Times and Gaz.' Dec. 11, 1858.)

The subject of superfœtation has been examined in another aspect by Dr. G. L. Bonnar, of Cupar-Fife, and some of the facts which he has brought forward are not consistent with the theory of the births of twins at different intervals ('A Critical Inquiry regarding Superfœtation, with Cases,' 1865). The first question to which his researches are directed is, at what period after parturition are the female procreative organs capable of again exercising their functions? It has been supposed that a period of thirty days must elapse in order to enable the organs to reacquire procreative power; but, according to Dr. Bonnar, the earliest period may be taken at the *fourteenth day* after delivery. Impregnation is not likely to take place until the organs have resumed their natural condition, and this will depend on the disappearance of the signs of recent delivery—such as the tender and swollen state of the vagina, the enlargement of the uterus with its relaxed mouth, and the lochial discharge. The persistence of the lochial discharge, the average duration of which after delivery Dr. Bonnar considers to be from one to three or four weeks, is of the greatest importance, as it is most likely to interfere with impregnation. The time for the restoration of the sexual organs to their natural state varies in different women, so that the date for re-impregnation must be more or less conjectural. Thus, in reference to the lochia, it has been elsewhere stated (p. 161, *ante*), that the discharge may be absent on the third day after delivery. When the child is not suckled by the woman, this discharge is said to continue longer and is more abundant than in other cases, although popular prejudice is the other way, as women generally consider that re-impregnation is not likely to take place so long as suckling is continued.

Another point for consideration is, what is the earliest period at which a child born can be reared? Without reverting to rare cases, such as the *Kinghorn* case, in which a child survived upwards of seven months, although born on the 174th day after intercourse, Dr. Bonnar is satisfied to rest upon Dr. W. Hunter's statement; and he therefore assumes 210 days, or seven calendar months, as the minimum period of uterine life at which a child should be born in order to be reared, or to have the power of living to manhood. With these data the following, among other cases, are cited to show the great probability of superfœtation occurring in married life. The Hon. Arthur Cole Hamilton, second son of the first Lord Mountflorence, married in 1780, Letitia, daughter of Claudius Hamilton, and had a son, born on the 7th July 1781, who lived to maturity, and a daughter, Letitia, born on the 5th January 1782, who lived and married Major Stafford. Between the two deliveries there was an interval of only 182 days; but, assuming that there was no prolific intercourse until fourteen days after the first delivery, the time for the gestation of the

second child which reached maturity, is reduced to 168 days. This case does not necessarily prove that the second child was conceived before the first was born; for, as in the *Kinghorn* case, the child may have reached an exceptional state of maturity at an early period. The facts, however, being indisputable, clearly show that the allegation of unchastity made in the *Kinghorn* case (*post*, p. 252), because a child born on the 174th day survived its birth for seven months, was wholly unfounded. Assuming—what is improbable—that the second impregnation took place immediately after the first delivery, the whole period is less by twenty-eight days than that which Dr. W. Hunter has assigned as necessary in order that a child should live and be reared.

But Dr. Hunter's period, compared with the results of modern experience, is placed too high. Dr. Bonnar has drawn up, from authentic sources, a table of eleven cases of children born at the end of the sixth month (180 days), who survived from eight days to fifteen years. Hence it may be inferred that, under favourable circumstances, when a child is well developed and healthy, a period of 180 days is the earliest at which it may be born and reared. But other facts show that even a shorter period will suffice. 1. William, first Baron Auckland, married Eleanor, second daughter of Sir Gilbert Elliot, Bart., and sister of Gilbert, first Earl of Minto, by whom he had fourteen children: amongst whom the fourth was the Hon. Caroline, born on the 29th July, 1781. who lived sixty years, and the fifth the Hon. William Frederick Elliot, who was born on the 19th January, 1782, and survived twenty-eight years. The interval between the two deliveries was 174 days, and, allowing that fruitful intercourse took place a week after the first delivery, this would leave 167 days for the birth of a child showing its powers of life by reaching the age of 28 years. This is thirteen days less than the period fixed by experience for the rearing, and forty-three days less than the period assigned by Dr. Hunter for the gestation, of a child which could be born with sufficient strength to attain manhood. 2. Lord Cecil James Gordon, brother to the late Marquis of Huntly, married the eldest daughter of Maurice Crosby Moore, Esq., of County Tipperary, Ireland; and had a child, Evelyn, born on the 19th September, 1849, and a son, Cecil Crosby, born on the 24th January, 1850, both of whom are now living (1865). These dates leave an interval between the two deliveries of only 127 days; and deducting a week, the gestation of the second child, which has reached the age of 15 years, would be only 120 days, or four calendar months.

As there is no record of the weight and appearance of the second children when born, and, at the same time, nothing to show that they were immature, one of two conclusions must be drawn—either (as in the last case) that a child of four months may be reared, or that a second conception took place in each instance during the gestation of the first child. Assuming the correctness of the dates, I quite agree with Dr. Bonnar that they furnish much more trustworthy evidence of the probable existence of superfœtation (superconception) than any of the cases hitherto adduced, in which a judgment has been based on the appearance of the children when born, or on the incorrect modes of calculation commonly adopted by women. The previous births are sufficient to limit the period of conception far more accurately than the feelings of the mother (op. cit. p. 18.)

It has been usually considered that after the second or third month the cavity of the uterus is so sealed up in the development of the embryo as a result of impregnation, that it is impossible that any fruitful intercourse can take place. In the two cases above-mentioned, however, viable children were born at five-and-a-half and four months respectively after the first delivery. On the theory of superconception the uterine organs must have been susceptible of a second impregnation up to the fourth month of gestation. But if the

children were not born mature, the power of re-impregnation must have existed for one or two months longer than the period usually assigned, *i.e.* up to the fifth and sixth months of a pregnancy already existing. These researches may help to explain some legal difficulties which have occurred in reference to gestation. They furnish a curious comment upon the suggestion made by some medical jurists, that superfœtation involves the conjugal fidelity of a wife, &c. (p. 225), for in the cases related by Dr. Bonnar no suspicion of illegitimacy could be for a moment entertained, simply on account of the shortness of the interval between the two deliveries of the same married woman.

Monstrosity and Superfœtation.—An extraordinary case of monstrosity, involving the questions of superfœtation and paternity, is stated to have occurred at Alexandria in Egypt. A Fellah woman was delivered of a dicephalous (two-headed) monster at apparently about the eighth month of uterine life, of which one head was *white*, and the other *black*, possessing in other respects the negro conformation, and this head was fully developed. The monster was born dead, and the mother died soon after her delivery. The change in the colour of the skin commenced at the neck of the black head, and was found by M. Prus, a physician at the port of Alexandria, to be due to the existence of a colouring-matter similar to that found in the skin of the negro race. The husband of the woman was a Fellah, whose skin was of a brownish colour. There were negro labourers in the port, but it could not be ascertained whether the woman had had intercourse with any of them. It is therefore impossible to say whether this was or was not a case of impregnation about the same time by two men of different races. Admitting that this occurred, it is difficult to understand why the black colour should have been confined to the head only. (See 'L'Union Médicale,' 5 Août, 1848.)

SUPPOSITITIOUS CHILDREN.

Another medico-legal case, in relation to legitimacy, occurs when a woman feigns delivery, and represents the child of another person to be her offspring. She may substitute the living child of another woman for a dead child of which she herself has been delivered, or for a mole which may have passed from her. So, again, a male may be substituted for a female child, and *vice versâ*. The practising of a fraud of this nature may seriously affect the rights of inheritance of parties; but it cannot be accomplished without great dexterity and cunning, or without the co-operation of several accomplices. Frauds of this kind have, in general, been committed by the aid of a low class of midwives. One instance occurred at Chelsea, in July 1842, where the fraud was brought to light by the death of the supposititious child. The calling in of a professional man would infallibly lead to discovery, when the question was simply whether delivery had or had not taken place; but if it is alleged that one *living* child has been substituted for another, the proof of this can depend on medical evidence only when the age of the supposititious child does not happen to correspond to the date of the pretended delivery. (See 'Ann. d'Hyg.' 1829, 2, 227.) The legitimacy of the claimant of the Douglas Peerage was disputed on this ground, but apparently without foundation. (See *post*, PATERNITY.) A remarkable instance of this description will be found in Henke's 'Zeitschrift der S. A.' 1845, 2, 172); and a trial took place some years since in England, involving the alleged substitution of a child, but requiring no medical evidence for its elucidation. (*Day* v. *Day*, Leicester Lent Ass. 1845.) In another case, elsewhere noticed (*ante*, p. 177), it was proved that a woman had substituted a doll for the dead body of a child of which she pretended she had been delivered. In a case mentioned by Dr. Chevers, one *Mussamat Janoo*, a midwife of Hissar, being employed to attend a woman in

her confinement, persuaded her that the child of which she had been delivered was a monster with two heads, not fit to be looked at; she afterwards said that it was dead, and she would take it away and bury it. She accordingly went away. Next morning, the midwife's services being required, she was sent for. She excused herself from going under the pretence that she (the midwife) had just been delivered of a child. This improbable story excited suspicion, and the police were called in: she declared that the child was her own. This she also maintained at the trial. It appeared, however, from the evidence of midwives who examined her shortly after the discovery of the child in her house, and also from the deposition of the civil-surgeon, that she exhibited no signs of recent delivery. Several of the neighbours, who were constantly in the habit of seeing her, deposed that she had not exhibited any outward signs of pregnancy. She did not attempt to prove how she had disposed of the body of the child which she alleged had died immediately after its birth. This was proved to be a false statement: she had taken possession of the child of which the woman whom she attended had been delivered, representing it as her own. She was convicted, and sentenced to imprisonment for seven years. ('Med. Jur. for India,' p. 512, from the 'Nizamut Adawlut Reports,' 26th April, 1853.)

The manner in which an imposition of this kind may be carried out is well shown by a case which occurred in France. The woman was in this instance married. She was deaf-and-dumb, and it appeared that her husband was in collusion with her. It was not in her power to make any disposition of some property to which the children of her marriage would be entitled, and by the advice of her husband she simulated pregnancy, in order to deprive the heir-at-law of the property to which, if she died childless, he would be entitled at her death. The facts, as far as they could be ascertained, were as follows:—The woman was 42 years of age, and although she had been married for a period of twenty years, had borne no children. On this occasion, admitting her statement to be true, she was delivered without any medical assistance. All her acquaintances and friends were ready to depose that for six months she had presented the usual progressive appearance of real pregnancy, and that she had manifested the usual indisposition attending this state, including occasional faintings at the parish church, &c.! For the heir-at-law it was contended that she had substituted, in her false accouchement, the child of a person named *Peyrins*, born only a few days before the date of her pretended confinement, and that she had made a false declaration of the birth. A midwife was ready to depose that the deaf-and-dumb woman had never been a mother. The decision in this singular case is not stated. ('Ann d'Hyg.' 1847, 1, 463.) It is obvious that it can only be by the coincidence of simultaneous delivery of another woman whose pregnancy is unsuspected, that a trick of this kind can be successfully practised. In all cases there must be a feigning of recent delivery, which a medical man of moderate acumen would be able to detect.

Cases involving a question of substitution of children are not very common. One of these (*Hutchins* v. *Hutchins*) was heard in the Vice-Chancellor's Court in May 1851; and in this the amount of ingenuity required to perpetrate the fraud was only equalled by the skill with which the facts were exposed, and justice ultimately done to the rightful claimant. Other cases have come before the Courts within a recent period. In *Reg.* v. *Skepelhorne* and *Wife* (C. C. C. February 1870), the prisoners were charged with conspiring to deceive a man named Ironside, by falsely representing that his wife had given birth to a female child. Mrs. Ironside, the wife, was in collusion with the accused. She had been married about nine months, and had given her husband *the impression* that she was pregnant. In conjunction with the prisoners, she

procured the child of another woman, who came forward as a witness at the trial. A woman acting as nurse was also examined, and stated that she had procured a 'sheep's pluck,' which was subsequently treated like the after-birth on the night of the pretended delivery! The facts were so patent that medical evidence was not necessary to prove that Mrs. Ironside had not been delivered of a child. A medical man may learn from this case that the marks of blood about the sheets or in the room, and the alleged burning of the after-birth, may in these cases admit of an entirely different explanation! The prisoners were convicted. In charging the jury, Byles, J., made the following remarks:—'To introduce a supposititious child into a family was an act that might be attended with very serious consequences, and to conspire to do so was undoubtedly a crime in the eye of the law. Let them suppose a case—that of a peer of the realm, for example. A duchess was supposed to be confined, her husband being away; a supposititious male child was introduced to him on his return; the duke, in course of time, died, and the child, on attaining manhood, was called to the House of Lords. But suppose it afterwards turned out that he was a bastard and the child of somebody else, and that the real heir to the estate, worth, it might be, 100,000*l.* a year and a peerage, was a brother of the deceased nobleman. Meanwhile the supposititious son had been ennobled. What was to be done in such a case? Let them take another instance in ordinary life. A child was put in the place of a real child, or of no child at all. The heir to real property in such a case would be defrauded, and if there were no such property the supposititious child would take his distributive share of the personal estate. Again, the register of births was falsified in such cases. In this instance the most guilty party was Mrs. Ironside, for she had procured a false entry to be made of the birth of a child, and by law that register proved itself. The jury would, therefore, see that a case of this nature was very serious indeed. But, in one view, it was not so serious, because, as in this case, the party principally implicated, Mrs. Ironside, did not appear to have had any other wish than to oblige her husband in the pleasant belief that he was the father of that child. So that the motives of the parties here, and the general complexion of the case, were not so serious as those which he had supposed.'

A somewhat similar case was tried at the Central Criminal Court, Dec. 1870 (*Reg.* v. *Mary Hall*). The prisoner had here conspired with a woman to make it appear that she had been delivered of a child. The nurse hired for the occasion was not allowed to be present during the alleged delivery, the prisoner acting as midwife. When the nurse was called into the room, she was shown by the prisoner the usual marks of a recent delivery, and on proceeding to wash the child, she found that it had already been washed, and was not a newly-born unwashed child. It was then proved that the prisoner had on the day of the pretended delivery procured the child of another woman who had been attended by a medical man, and who gave confirmatory evidence on this point. Dr. Farre said that he attended the woman after the alleged birth, and from what he saw he was sure that she had never given birth to a child. He then charged her and the prisoner with fraud. The prisoner was convicted. In this case it will be perceived that the prisoner had cunningly waited until she could procure a new-born infant, and had then fixed the false delivery for the same day.

These, it will be seen, were vulgar attempts at fraud, easily detected and exposed when medical men are called in, or when all the parties concerned are not in collusion.

A more daring attempt of this kind came before the House of Lords in 1870, in reference to a claim for the earldom of Wicklow (*The Wicklow Peerage case*, Committee for Privileges, April 1, 1870). The title and estates of the Earl of Wicklow passed at his death to his brother's issue. The first

in succession was George Howard, who, after a career of dissipation, had died in October 1864. He had been married in February 1863 to Ellen Richardson, the daughter of a gentleman's coachman. In default of issue the estates devolved on his brother Charles, the second in succession. Ellen Howard (late Richardson) produced a male child who, she alleged, was born on the 16th May, 1864, and who, if such were the case, would be the son of her husband George Howard and the rightful Earl. Mrs. Howard was at that time in lodgings, and the lodging-house keepers, Mr. and Mrs. Bloor, and a sister of the latter, one Rosa Day, were the principal witnesses in favour of the claimant. Mrs. Howard was, or professed to be, taken suddenly ill at the date mentioned. Mr. Bloor went for a doctor, who was not at home, and on returning he was told that Mrs. Howard had been confined, and he saw an infant in Rosa Day's arms. This was the whole of the evidence of the child's parentage. The Lord Chancellor observed that the evidence was given by the witnesses with a firmness of demeanour and an absence of hesitation which would have commanded credence, unless it had been contradicted by all the surrounding circumstances.

No medical man and no nurse attended Mrs. Howard, although it was her first confinement, and the infant would have been a seven months' child. It was never registered, and never baptized. There was further strong evidence that she had not borne a child, and that the child which she had produced as her own was obtained by her in August 1864 from a girl who had been recently delivered in the Liverpool workhouse. Mrs. Howard was clearly identified as the person who had taken away a child from the workhouse at this time. Her story was thus proved to be false. The House of Lords decided against the claim, and came to the conclusion that the witnesses had been guilty of perjury.

Fraud may be fairly suspected in cases of this kind, when a woman has not been attended by a medical man, and when there is, as there always must be, an unexplained mystery about the surrounding circumstances. A medical man of character may be called in some time after an alleged delivery, to attend a woman, and unless he is well upon his guard, his name and reputation may be used as a shield to cover a gross imposture. In this case he should take nothing for granted; but should firmly insist upon having a knowledge of all the facts, and see all the parties alleged to have been present at the delivery. He must not trust to the appearances of blood in the room, or the appearances of a burnt placenta, for these conditions may be easily imitated by an artful midwife.

The case of *Gedney* v. *Smith* (Rolls Court, November 1864) is in this respect highly instructive. The fraud was nearly successful, and but for the dying declaration of the woman, would probably have wholly escaped detection and exposure. The plaintiff claimed to be the only child of Mr. and Mrs. Gedney, and to be entitled to property under a marriage-settlement. Mr. and Mrs. Gedney were married in May 1851: from that time to 1854 there was no issue, although it was stated there had been several miscarriages. Mrs. Gedney, alleging that she was pregnant in 1853, came to London and took lodgings in the early part of 1854. On the 10th of February in that year, she was apparently seized with the pains of labour, and sent for a man, calling himself Dr. Goss, who, it was stated, delivered her of a female child—the plaintiff in this case. Mr. Gedney then came up to London, dismissed Dr. Goss, with whom he was dissatisfied, and consulted Dr. Farre. The substance of this gentleman's evidence at the trial was that he was called in, as a perfect stranger, to attend Mrs. Gedney in her confinement on the Tuesday, the lady having been confined on the Friday previously; that he attended her from the 14th of February to the 7th of March; that it was an ordinary case of confinement—there was nothing unusual in the mother or child; that the child *looked* three or four days old when he first saw it; that he had no doubt he

pursued the same mode of attending to the case as was resorted to in other similar cases, such as putting his hand on the uterus, abdomen, &c.; that it was not possible the lady could *not have been confined at all*, &c. The evidence of the reputed father, Mr. Gedney, was that his wife, according to her own statement, was pregnant in 1853, and in February 1854, she came to London, not to be confined, but for the purpose of procuring medical advice. He registered the child, and treated it as his own up to the time of his wife's death in March 1857, and it was not until then that he had any doubt that the plaintiff was his child. On the part of the defendant, it was alleged that Mrs. Gedney had *not* been delivered of a child. Dr. Porter, her physician, who examined her body after death, deposed to this effect; and another physician, who attended her for the venereal disease in September 1853, stated that he did not believe that she was at that time pregnant. Three of the female servants of the family, who were much about her, and saw her undressed, deposed that when she left for London, in February 1854, there was no appearance of her being pregnant. This was confirmed by the lodging-house keeper and other persons who had full opportunities of judging of her condition.

It was further proved that Dr. and Mrs. Goss (the latter with a bundle under her cloak) called at the house on the afternoon of the day on which Mrs. Gedney was said to have been confined, and that they were alone in the room for some hours with Mrs. Gedney. During this time (from 4 to 11 p.m.) no nurse was procured, no noise of a child was heard; but various articles were asked for, and on the landlady entering the room in the evening, she was shown a baby, but it had no redness of skin about it like new-born children. She also saw some marks of blood, &c., about the fireplace, and Dr. Goss told her that he had burnt the after-birth. It was further shown that on the 4th of February, as Mrs. Gedney was alleged to have been confined on the 10th, a poor woman named Lydia Fletcher was delivered of a female child at the York-road Lying-in Asylum; and that on the Tuesday previously to the 10th of February (which was on Friday) a gentleman and lady—afterwards identified as Dr. and Mrs. Goss—had called at the hospital, and induced Lydia Fletcher to consent to give her child to them, in order that it might be adopted by a lady, who would bring it up as her own.

The child of Fletcher was proved to have been remarkably fair, with blue eyes, and this corresponded to the description of the child brought to the lodgings on the 10th of February. There was a total absence of parental likeness, as Mr. and Mrs. Gedney were dark. To support further the defendant's case, a clergyman was called, who swore that Mrs. Gedney voluntarily confided to him that the plaintiff was a supposititious child, which she had adopted, in order to recover the affections of her husband, by appearing to have become a mother. This statement was borne out by a lady's maid of Mrs. Gedney, who swore that her mistress had confided to her the whole secret of the deception put upon her husband and family: the testimony of the two differing mainly in the fact that to the former Mrs. Gedney was alleged to have stated she had been confined of a stillborn child, and to the latter that she had never been confined at all. Mrs. Gedney had subsequently, it was alleged, made to her father, on her deathbed, a confession of the whole deception; and this was the statement which came to the knowledge of Mr. Gedney on the day of his wife's funeral, and first raised in his mind a doubt whether the plaintiff was his own child. The jury returned a verdict for the defendants, thus denying the fact of the plaintiff being the child of Mr. and Mrs. Gedney.

The remarkable part of this case is, that the fraud had nearly succeeded. It had been perpetrated ten years before the trial, and did not come to the knowledge of the husband until after his wife's death. Was this woman delivered of a child at all? According to Dr. Porter, who examined her body after

death, she had never borne a child. The reasons for this opinion are not given, but it is to be presumed that he found the uterine organs in the virgin state. The medical gentleman who was called in to attend her after the dismissal of Dr. Goss, stated that he saw her every day for the first week, every alternate day for the second week, and during the third week rather oftener. His opinion was that she had certainly been delivered of a child. The conflicting evidence on a simple matter-of-fact in this case points to the necessity, on the part of a practitioner, of making accurate notes of obstetric cases which come before him in a mysterious manner. These notes should include, not only the medical facts, but the reasons upon which the opinions are based.

AGE. MINORITY AND MAJORITY.

The word *minor* is synonymous with that of *infant*, and is applied in law to anyone under the age of twenty-one years. The age of a person may render him incompetent to the performance of civil duties. Minors are frequently called upon to act as witnesses in civil and criminal cases. In rapes committed upon children it is especially important to notice whether the prosecutrix is or is not competent to give evidence. The law has fixed no age for *testimonial* competency, and I have never heard of the question being referred to a medical practitioner. The child is always orally examined by the Court, and it is soon rendered apparent by the answers whether the witness possesses a proper knowledge of the nature and obligations of an oath. If not, his or her testimony is not received, or, in a case of rape, the trial is postponed, and the child is placed under instruction, to appear again at the following sessions or assizes. The competency of a child as a witness, therefore, does not depend on age, but upon its degree of understanding. The law on this subject was thus clearly expressed in a judgment given by Mr. Justice Erle. When a child is under the age of seven years, the law presumes him to be incapable of committing a crime; after the age of fourteen, he is presumed to be responsible for his actions as entirely as if he were forty; but between the ages of seven and fourteen, no presumption of law arises at all; and that which is termed a malicious intent—a guilty knowledge that he was doing wrong—must be proved by the evidence, and cannot be presumed by the mere commission of the act. In this case the boy was *ten* years of age, and was indicted for setting fire to a hayrick. There was no evidence of any malicious intention, and the jury acquitted the prisoner, considering that at the time he fired the rick, he had no guilty knowledge that he was committing a crime. If, however, any facts should show that there was a guilty knowledge, then children even under ten years may be found guilty, on the principle of *malitia supplet ætatem*: but the younger the child, the stronger the evidence which would be required for conviction. In these cases age is proved, not by a medical examination of the teeth, but by the production of legal documents, or the oral testimony of relatives. In respect to criminal responsibility as affected by age, it was held by Keating, J., in one case (*Reg.* v. *Cowley*, 1860), in which the prisoner, a boy aged *eight* years, was charged with felony, that up to seven years of age the law presumed that a child could not distinguish right from wrong, so as to be capable of crime; and evidence was not admissible to prove that he possessed that capacity. But after the age of seven, and up to fourteen years, though the law presumed a child to be *primâ facie* incapable of crime, this presumption might be rebutted by evidence which showed that he had what was called a mischievous discretion. In the present case there was no evidence of that sort, and therefore his lordship directed the jury to acquit the prisoner. In another case, tried before the same learned judge in May 1863 (*Whitby* v. *Hodgson*), an action for trespass and false imprisonment was brought against a man for giving into custody, on a charge of stealing, a

boy under six years of age. It appeared that the child had stolen some wood; but it was held that at this age, and under seven years, a child was *doli incapax*,—hence that the defendant was not justified in giving the boy into custody. The jury returned a verdict with damages against the defendant. A case involving a similar question came before the same learned judge at the Bedford Summer Assizes 1872, in reference to a charge of manslaughter (*Reg.* v. *Burrows*). William Burrows was charged with the manslaughter of Frederick Hopkins. The prisoner was about *eight years* old, and in May last both he and the deceased, a little boy of about the same age, were running about together, and each had a stone in his hand. They threw at each other, and the prisoner's stone struck the deceased. Erysipelas set in, and the little boy died. The medical evidence showed that death was caused by erysipelas brought on by the blow; that the deceased was a weakly child, predisposed to the complaint of which he died, and that the blow would not have been sufficient to cause death in a healthy subject. Keating, J., told the jury that, the prisoner's age not appearing upon the calendar, the case had been allowed by him to go before the Grand Jury without the direction to throw out the bill which would otherwise have accompanied it. A true bill having been found, it was now their duty to deal with it. For their guidance in doing so, his lordship told them that the law declared children under the age of seven years to be incapable of the intent necessary to support a charge of felony. Between the ages of seven years and fourteen years the law presumed the absence of that intent, but allowed the facts to be laid before a jury that they might judge whether there were circumstances showing that, in spite of tender years, such an intent in fact existed. Applying this principle to the present charge of causing death by an unlawful act, the question would be, did they consider the prisoner capable of knowing that what he did was an unlawful act? The prisoner was acquitted.

According to the principles of our law, a male at fourteen is considered to be at years of discretion, and becomes then responsible for his actions; at twenty-one he attains majority, and is at his own disposal, and may alienate his lands, goods, and chattels by deed or will. It is only when this age has been attained that an individual can be sworn to serve on a jury. The period at which a male is considered to have attained full age varies in different countries: thus, in the kingdom of Naples it was formerly fixed at eighteen years; in Holland at twenty-five; but generally throughout the States of Europe the law prescribes twenty-one years, the same as the common-law of England.

A child under fourteen indicted for murder or arson must be proved to be conscious of the nature and criminality of the act. In the case of *Reg.* v. *Vamplew* (Lincoln Summer Assizes, 1862), in which I was required to give evidence, a girl under fourteen years of age was convicted of destroying the life of a child by strychnia. It was shown that she was competent to understand the nature of the act. Under fourteen a male infant is presumed to be incapable, on the ground of incapacity, of committing a rape as a principal in the first degree, or even of committing an assault with intent to perpetrate that crime; but if the boy have a mischievous discretion, he may be convicted as a principal in the second degree. The patient, if above fourteen, may be convicted of an unnatural crime, although the agent be under fourteen. A female under the age of ten years is presumed to be incapable of consenting to sexual intercourse. ('Taylor on Evidence,' vol. 1, p. 117.)

A person is completely of age on the first instant of *the day before* the twenty-first anniversary of his birthday, although forty-seven hours and fifty-nine minutes short of the complete number of days counting by hours; and this mode of calculating age and time is applicable to all the other ages before

and after twenty-one. This is on the principle that a part of a day is equal to the whole of a day in a legal point of view. The following case in reference to this question was decided by appeal in the House of Lords, in February 1775. An estate was bequeathed to a Thomas Sansom so soon as he should arrive at the age of twenty-one. He was born between the hours of five and six on the morning of the 16th August 1725, and died about eleven in the forenoon on the 15th August 1746. The question was whether at the time of his death he had arrived at full age to take the estate. In the Court of Chancery it had been so decided, but it was urged that more than sixteen hours were wanting to complete the full term of twenty-one years. This plea was overruled by their Lordships, and the decree confirmed, because the deceased was living on the day which would have completed the period. A case (*Best* v. *Hall*) was tried in the Court of Exchequer, Westminster, in June 1837. A gentleman accepted a bill bearing date the 8th June, 1831, and he died a few months afterwards. His executors disputed payment on the ground that he was not of age, but in his minority at the time that he parted with the bill. It appeared that he was born on the 7th June 1810, a fact proved from his books by the medical practitioner who attended the mother. Although at the date of the bill he had attained his majority, a witness proved that he had received the bill a week before, and filled up the date. The jury therefore returned a verdict for the defendants, not considering the acceptor liable at the time of the transaction. This case shows that important services may be rendered by medical men keeping books in which they make regular entries of cases. A few minutes or hours may thus determine the attainment of majority, and with this the responsibility of minors for civil contracts or the validity of their wills. By 1 Vict. c. 26, no will made by any person under the age of twenty-one years shall be valid; and as the day of a person's birth is included in the computation of his age, and there being in law no fraction of a day, a valid will may be made at any time on the day before that which is usually considered to be the twenty-first anniversary of birth. In regard to marriage, a male at fourteen is considered by law to have the power of giving or withholding his consent. Under this age his consent is not valid, and the matrimonial contract is not binding on him. A female at seven years may be betrothed or given in marriage; at nine (20 Henry III.) is entitled to dower; at twelve is at years of maturity, and may consent or not to the marriage contract. But even under these circumstances the law requires the consent of the nearest relative or guardian, unless the parties have been previously married to others. A marriage contracted by a minor has, however, been held valid, although the father was at the time living, and did not give his consent. At full age, either in male or female—that is to say, at twenty-one years—the parties may contract marriage of their own free will, without the consent of either parent or guardian.

There is another aspect in which the proof of age may be important—namely, in reference to the responsibility of accused persons for alleged criminal acts. This will be apparent from the case of *Reg.* v. *Thornhill* (Stafford Lent Assizes, 1865). The prisoner was indicted for a misdemeanour in carnally knowing and abusing one Mary Sambrook, being a girl above the age of 10 and under the age of 12 years. It appeared in evidence that the girl's birthday was on the 5th of December 1852, and the offence was alleged to have been committed on the 4th of December 1864. The question then arose whether the girl was under the age of 12 years, so as to bring the offence within the statute. It was objected by the prisoner's counsel, that as on the 5th of December the girl would enter on her thirteenth year, she had therefore completed her twelfth year on the 4th of December, and that the law did not recognise a fraction of a day in such a case, so that she was 12 years old as much

on the first hour of that day as on the last, and his lordship (Pigott, B.) so held. The indictment contained counts alleging rape and assault, but, after the cross-examination of the girl, his lordship stopped the case, and the prisoner was acquitted. It is obvious that this principle would equally apply to charges of felony for the carnal knowledge of children under 10 years of age, as well as to the misdemeanour of taking girls under the age of 16 years from the custody of their parents or stealing children under the age of 14 years from their parents or guardians. (24 & 25 Vict. c. 100., ss. 50, 51, 55, 56.)

LEGITIMACY.

CHAPTER 67.

LEGAL PRESUMPTION OF LEGITIMACY—DATE OF CONCEPTION NOT REGARDED—DIFFERENCE BETWEEN THE ENGLISH AND SCOTCH LAW—CHILDREN BORN AFTER THE DEATH OF THE WIFE—NATURAL PERIOD OF GESTATION—DURATION FROM ONE INTERCOURSE—CAUSE OF THE VARIATIONS—DATE OF CONCEPTION—PREMATURE BIRTHS — SHORT PERIODS OF GESTATION — VIABILITY — EARLIEST PERIOD AT WHICH A CHILD MAY BE BORN LIVING—'FAMA CLAMOSA.'

Legal presumption of legitimacy.—Every child born either in lawful matrimony, or within a period after the death of the husband in accordance with the natural duration of gestation, is considered by the English law to be the child of the husband, unless the contrary be made clearly to appear by medical or moral evidence, or by both combined. It is only in reference to *medical* evidence that the subject of Legitimacy can here be considered; but it is extremely rare to find a case of this kind determined by medical evidence alone. There are generally circumstances which show that a child whose legitimacy is disputed, is the offspring of adultery, while the *medical* facts may be perfectly reconcilable with the supposition that the claimant is the child of the husband. These cases, therefore, have been repeatedly decided from *moral* evidence alone—the medical evidence respecting the period of gestation or physical capacity in the parties leaving the matter in doubt. The law which formerly prevailed in this country was to the effect, that if a child was born during marriage, the husband being within the four seas of the realm (*intra quatuor maria*), and no physical impossibility being proved, the child was legitimate. Access was presumed unless he could prove that he was '*extra quatuor maria*' for above nine months previous to the birth. ('Blackstone,' vol. 1, p. 456.) But the present state of the English law on the subject appears to be this. A child born during marriage is deemed illegitimate when, by good medical or other evidence, it is proved that it was *impossible* for the husband to be the father—whether from his being under the age of puberty, from his labouring under physical incapacity as a result of age or natural infirmity, or from the length of time which may have elapsed since he could have had intercourse, whether by reason of absence or death. With proof of non-access or immorality on the part of the mother, so important on these occasions, a medical witness is not in the least concerned. In a case of voluntary separation of husband and wife, which the law does not recognise, the children born are the children of the husband, unless non-access can be clearly proved. In January 1849 a woman applied to a magistrate for a summons against a man, to show cause why he refused to contribute towards the support

of a child, of which she declared him to be the father. It appeared that she had parted voluntarily from her husband, and had lived three years with the adulterer, and during the last year this child was born. The magistrate declined granting the summons, as she had no claim upon the adulterer. There was opportunity of access on the part of the husband, and he alone was liable in law for the maintenance of the child. In a case before Kindersley, V.C., *Atchley* v. *Sprigg* (33 'Law Journal,' Chan., p. 345), it was proved that husband and wife had lived together nine years without having had a child, and that they then separated and did not live together again. Ten years after the separation, and while the wife was in the habit of committing adultery with another man, a child was born. This child was treated by the paramour as his own, was called by his surname, and was brought up by him. Its legitimacy was contested, and the Vice-Chancellor decided that, notwithstanding the possibility of access on the part of the husband, the child was illegitimate. It was held that in this case there was convincing evidence of illegitimacy, although access was possible. Another case decided by the same judge (*Plowes* v. *Bossey*, Feb. 1862) shows, that where there is nothing strongly to affect the character of the woman, a child will be held to be legitimate, although the opportunity of intercourse may have been of the slightest possible description.

In some instances, the law assumes without medical evidence that the offspring is illegitimate, as where the husband and wife have been legally divorced '*a vinculo matrimonii*.' When children are born where the divorce is '*a mensâ et toro*,' they are presumed to be illegitimate until the contrary appears.

There is a peculiar difference in relation to legitimacy between the laws of England and Scotland. A child born of parents in Scotland before marriage, is rendered legitimate by their subsequent marriage. In England the offspring is illegitimate, whether the parents marry or not after its birth; and under the Poor Law Act (4 & 5 Will. IV.), if a man marry a single woman having a child or children living, of whom he is not the father, he is bound to maintain them as if they were his own, and born after marriage. At the same time the children are not legitimated by the marriage. In the case of *Birtwistle* v. *Vardell*, decided on appeal by the House of Lords in August 1840, it was held that a child thus legitimated by the law of Scotland could not be allowed to succeed to his father as heir to real estate in England. The Scotch rule appears to be more consistent with natural justice; since, according to the English practice, it is inflicting confiscation on the offspring, for a fault in the parents, which they had done all in their power to amend. (See also the case of *Dalhousie* v. *M'Douall*, on appeal to the House of Lords, March 1840.) These suits are chiefly instituted in respect to the right of succession to real estate or in claims for peerages; and medical evidence is then frequently required to clear up the case.

From what has been stated, it will be perceived that the English law does not regard the date of *conception*, which cannot be fixed, but the date of *birth*, which can be fixed. Medical evidence may relate—1st, to the actual length of the period of gestation: this may be in a given case so short or so long, as to render it impossible that the husband could be the father. 2ndly, there may be physical incapacity in the husband to procreate: he may be too old or too young—or he may labour under some physical defect rendering it impossible that he should be the father. 3rdly, there may be sterility or incapacity in the wife, rendering it impossible that the child should be the offspring of a particular woman: in other words, the claimant may be a supposititious child. (See SUPPOSITITIOUS CHILDREN, p. 234, *ante*.)

Children born after the death of the wife or husband.—It appears that a child born *after* the death of the wife, provided she has been lawfully married, is legitimate, although the marriage is legally dissolved by the death. This is

a mere hypothetical question. Two cases have already been quoted (*ante*, pp. 208 210), in which living children were born after the death of the women; these facts are of especial interest in relation to tenancy by courtesy. Whether the birth takes place by the aid of art through the outlet, or by eventration, as in the Cæsarean section, the husband, if the wife be at the time dead, cannot legally claim the estate; but the child thus born out of marriage is legitimate, and if it live may, on attaining its majority, take the estate of which the mother was seised. (See *ante*, *Cæsarean extraction*, p. 216.) The fact that the English law disregards the time, place, or date of conception might therefore give rise to a singular question. A child may have been conceived before the marriage of the parents, and be brought into the world by the Cæsarean operation after the death of the mother: hence it would neither be *begotten* nor *born* in wedlock, and yet, according to the principles of the English law, it would be the legitimate offspring of the marriage.

It sometimes happens that a child is born after the death of the husband. Conception is assumed to have taken place during wedlock; and although the child is not born in wedlock, the presumption is in favour of legitimacy, unless non-access or physical incapacity be distinctly proved. The legal questions which may arise under such circumstances are elsewhere considered. (See POSTHUMOUS CHILDREN, p. 276.) Hence *conception* during wedlock, and *birth* after the dissolution of the marriage by death—or conception before wedlock and birth during that state—or conception and birth during lawful wedlock, equally create a presumption in favour of the legitimacy of offspring.

Natural period of gestation. Duration from one intercourse.—The first point to be considered is—What is the natural period of gestation, and whether this is fixed or variable? According to the testimony of experienced accoucheurs, the average duration of gestation in the human female is comprised between the *thirty-eighth and fortieth weeks* after conception. Numerous facts show that the greater number of children are naturally born between these two periods. Out of 186 cases reported by Dr. Murphy, the greater number of deliveries took place on the 285th day ('Obstetric Reports,' 1844); but his opinion is that 301 days may be taken as the average limit of gestation. ('Lancet,' Nov. 11, 1844, p. 284.) Dr. Blundell considered that the average period was 274 days; Sir J. Simpson (*Bromwich* v. *Waters*, Chester Lent Assizes, 1863, p. 256) 277 days, *i.e.* nine calendar months and a week; and other accoucheurs of repute have fixed upon 280 days. Among 500 cases observed by the late Dr. Reid, there were 283 in which the period of gestation was within 280 days, and 217 cases in which it went beyond this period. Dr. Duncan found, in a group of forty-six cases, that 275 days is the average interval between that which he terms 'insemination' (intercourse) and parturition. The largest number of cases on any particular day was seven on the 274th day. ('Edin. Monthly Journal,' 1854, vol. 9, p. 230.) The most common cause of the variation in time is, that the usual mode of calculation, by reference to the suppression of the menstrual discharge, even in a healthy woman, may lead to a possible error of two, three, or even four weeks, since there is no sign whereby, in the majority of women, the actual time of *conception* can be determined. Some women have been able to determine, by peculiar sensations, the time at which they have conceived; but, as a general rule, this must be a matter of pure conjecture when they are living in connubial intercourse.

On the other hand, accidental and isolated cases have clearly proved that a great difference naturally exists among women with respect to the period of gestation; and it is probable that in no two is it necessarily the same. When there has been only *one* intercourse, the duration of pregnancy may be certainly calculated without reference to any changes in the female constitution: for

the date of conception, within certain limits to be presently mentioned, would be fixed. Observations of this kind have shown that women have differed from each other; and in several instances the time has exceeded or fallen short of the period of forty weeks, which has been usually set down as the limit of natural gestation. In three cases known to the late Dr. Rigby, labour came on in 260, 264, and 276 days, making a difference of sixteen days. ('Med. Times,' March 14, 1846, p. 471.) In three other instances, which were privately communicated to me by Dr. S. W. J. Merriman, labour commenced at 281, 283, and 286 days respectively after one intercourse; and in a case which occurred to Dr. Reid, the labour did not commence until after the lapse of 293 days from a single intercourse. ('Lancet,' July 20, 1850, p. 79.) In another case accurately observed, communicated to me in March 1865, the gestation lasted 281 days. Menstruation had ceased on the 16th Sept., intercourse took place on the 20th, quickening occurred on the 23rd January following, and a full-grown male child was born on the 28th June following. In two cases, for which I am indebted to the late Mr. Carrington, the females were delivered respectively in 249 and 260 days after a single intercourse. In a third, in which pregnancy was the result of a rape, there was an interval of 261 days between intercourse and delivery. Hence it will be perceived that in well-observed cases, where there could be no motive for misstatement, and in which the characters of the women, some of whom were married and had already borne children, were beyond the reach of suspicion, a difference of not less than *thirty-three days* has been observed to occur,—*i.e.* between the earliest case recorded by Dr. Rigby, and the latest reported by Dr. Reid. This is worthy of remark, because in a case referred to hereafter (*Luscombe* v. *Prettyjohn*, *post*, p. 268), it was held that 299 days, only six days longer than in Dr. Reid's case, was an *impossible* period for human gestation! In addition to the above facts, showing the variability of the period after a single intercourse, the following may be cited. Dr. Macilwain, U.S., has reported a case of gestation, which he thinks must have extended to 296 or at least to 293 days. ('Amer. Jour. Med. Sci.' July 1848.) I am indebted to Dr. Oldham, for nine cases, which have fallen under his own observation, in which the duration of pregnancy from a single intercourse was accurately observed:—

Case.	Days.	Case.	Days.	Case.	Days.
1	266	4	280	7	283
2	268	5	280	8	284
3	271	6	281	9	285

It is to be observed of these cases that Nos. 4, 5, and 6 represent the periods of gestation in the same woman at different times. Dr. Lockwood has published the following as the result of his experience. The actual duration of the term of gestation in the human subject, *i.e.* the interval between intercourse and delivery, was ascertained by him in four cases:—No. 1, aged 19, duration 272 days (first confinement); No. 2, aged 30 (first confinement), duration 276 days; No. 3, aged 17, duration 270 days; No. 4, aged 44 (seventh confinement), duration 284 days, the child weighing fourteen pounds. ('Brit. Amer. Jour.' Dec. 1847, p. 214.) M. Devilliers has also published the particulars of some cases, in which the interval from a single intercourse was accurately determined. Delivery took place at the following periods:—229, 246, 257, 267, 276–281, 278–283, 270, and 266–272 days, making an extreme difference of at least 49 days in the earliest and the latest periods between intercourse and delivery. ('Gaz. Méd.' Mars 4, 1848.) Another authority, Dr. Ahlfeld, made his observations on 425 women, whose children seemed mature, and, reckoning from the day of conception, the average duration of

gestation was 269·9 days. Hecker's tables gave an average of 273·5 days. Out of thirty cases of single or well-defined coitus collected by Ahlfeld, gestation varied from 233 days to one case of 313 days. The average of all was 269·17, which corresponds closely with the period obtained by other modes of observation. ('Amer. Jour. Med. Sci.' Oct. 1870, p. 566.)

Cause of the variations.—It appears probable from recent researches, that the duration of the pregnant state may be dependent on the relative excitability of the uterine system at the menstrual periods. Numerous facts tend to show that, notwithstanding the general suppression of the menses, there is great excitement of the uterine system at what would have been, in the unimpregnated state, the regular menstrual periods. Sometimes, as it has been elsewhere stated, this really amounts to a periodical discharge of blood. There is also great reason to believe that abortion takes place more readily at these than at other periods. Hence some accoucheurs are inclined to consider that the duration of pregnancy is really a multiple of the menstrual period; and that in the majority of women it will occur at what would have been the tenth menstrual period, or forty weeks from the date of intercourse and supposed conception ('Gaz. Médicale,' 4 Décembre 1847, p. 968); and, according to the degree of excitement of the uterine system, the child may be expelled at a period earlier or a period later than that which is assigned as the more usual natural term. It is in some respects a confirmation of this view, that the menstrual function is again frequently established one month after parturition. Cedershjöld announced as a law that labour takes place at the tenth menstrual epoch due, so that to obtain the duration of pregnancy we should multiply the interval between two periods by 10. In many women, the interval is 28 days, which would give $10 \times 28 = 280$ days; in others it is $27\frac{1}{2}$, $28\frac{1}{2}$, 29–30. Hence there may be a duration of 275, 285, 290 and 300 days. By most authorities, according to Ahlfeld, the duration is placed at 280 and 275 days, both of which are, in his opinion, too high. ('Amer. Jour. Med. Sci.' Oct. 1870, p. 567.) Dr. Reid states that the exceptions to this theory are so numerous as to destroy its value as a rule. He quotes two cases in support of his opinion. In the first case, impregnation took place one day before the expected catamenial period; the menstrual flux appeared at the usual time, but its duration and amount were greatly reduced: labour occurred 280 days after the day of conception. In the second case, occurring in the same woman, conception took place on the fourth day after the cessation of the catamenia (which lasted seven days); yet labour, as before, happened on the 280th day from the time of conception—*i.e.*, eleven days later than the time for the eleventh recurrence of the menses, the usual interval being twenty-six days. ('Lancet,' September 9, 1853, p. 207.)

Admitting that conception may occur at any time between two menstrual periods, this theory will explain the variations which have been noticed in the duration of pregnancy after one intercourse. The late Dr. Rigby held the opinion that parturition takes place at the fortieth week, because the development of the child then acts by distending the uterus, which, in its irritable state, tends to throw it off. It is not, however, found that the duration of pregnancy is at all dependent on the size and weight of the child, or that children born at the fortieth week resemble each other in these respects. Hence the commencement of parturition cannot be ascribed to the physical conformation of the child. It would be desirable to know whether this periodicity can be generally traced in the time at which labour commences. Some women menstruate every three weeks: and, so far as I can ascertain, it has not been shown that in them the correspondence of gestation to their menstrual periods has been made out. Such women should, according to the theory, bear children to the thirteenth period from the last cessation. Dr. Clay believes, from the ob-

servations which he has made, that the variation in the period of gestation is dependent on the age of the female as well as of the male. He considers that the term of gestation is extended in proportion to the age of the female, and that while in a girl of 17 the period may be taken at 270 days, in a woman of 44, it would extend to 284 days. Again, when a woman has been impregnated by a man much older than herself, the term of utero-gestation is, in his opinion, longer than would be assigned to a female of this age, and *vice versâ*. ('Record of Obstetric Medicine,' June 1848, p. 212.)

It has been supposed that cases of lengthened gestation were nothing more than instances of protracted parturition: the pains indicative of delivery commencing at the usual time, but continuing more or less at intervals over a much longer period than usual. In an instance mentioned by Dr. Jörg, a woman went her full time, but parturition lasted a fortnight longer, the symptoms appearing and then disappearing. Admitting that this occasionally happens, still it shows that gestation from a particular pregnancy may be protracted considerably beyond the ordinary period.

There is no reason to believe that the *sex of the child* has any direct influence on the length of the pregnancy. It has been stated that gestation was longer with male than female children; and evidence of this kind was actually tendered in the Gardner Peerage case. A medical witness then asserted that the average period was 280 days for a female, and 290 days for a male child. The Solicitor-General very properly inquired—Supposing the child is an hermaphrodite, what then is the time? The witness said that he would take between the two! It is not observed that children labouring under sexual deformity are born earlier or later than those in which the sexual organs are perfectly developed. As an answer to this singular hypothesis, it may be observed that of Dr. Murphy's two protracted cases (*post*, p. 262), the one was a female and the other a male child.

Date of conception.—Another and probable cause of the differences is that the date of conception is not the same after a single intercourse among different women. It is customary for physiologists to date conception from intercourse: but the researches of Bischoff and Raciborski have shown that a variable interval may elapse, according to the situation of the ovum at the time. Bischoff believes that the ovum escapes from the Graafian follicle just as the menstrual discharge is about to cease, and he is of opinion, that to be fecundated, it must be acted on while it is in the Fallopian tube. Hence he considers, in order that impregnation should take place, that there must have been an intercourse within eight or twelve days from the cessation of the menstrual discharge: and in answer to the objection, that there are some women who become pregnant at any period, he considers that there is great uncertainty in the time at which the ovum leaves the ovary,—at which it enters the Fallopian tube, and how long a period it may take to reach the uterus, but that, as a rule, impregnation most readily ensues shortly after the cessation of menstruation. ('Med. Times and Gazette,' April 8, 1854, p. 351.) Raciborski considers that the time is more limited. Out of sixteen women who gave him such information as enabled him to determine the time of fecundation, there was only one in whom this occurred so late as ten days after the cessation of the menstrual flux; and in this one, the menses had been suddenly arrested several days before the usual time of cessation, so that the extrusion of the ovum did not probably take place until about two days prior to the act of intercourse to which it owed its fecundation. (Baly and Kirke's 'Recent Advances in Physiology,' 1848, p. 58.) These authors also state that Naegele was accustomed to reckon the duration of pregnancy at nine months and eight days from the last menstrual period, and in normal cases he has found this to be correct.

Dr. Oldham met with a case in which impregnation took place twelve days after menstruation; and he states that he has known it to occur at the respective times of ten days, twelve days, and even twenty-one days after the monthly periods; and he knows of no fact to disprove the opinion that the human female is susceptible of impregnation at any time between her monthly periods. ('Med. Gaz.' vol. 44, p. 48.) In the same volume (at page 930) Mr. Kesteven has reviewed the theory of Bischoff at some length, and to his remarks I must refer the reader. According to Dr. Duncan, a single insemination at any period of the interval between two menstrual periods may result in fecundation. ('Edin. Monthly Journal,' 1854, vol. 9, p. 233.)

Dr. Ahlfeld gives as the result of his experience in 219 cases that conception took place on an average 9·72 days after the first day of menstruation, and in 161 cases on an average 5·28 days from the last day of menstruation, but it was most frequent within three days. ('Amer. Jour. Med. Sci.' Oct. 1870, p. 566.)

The experience of Dr. Oldham is confirmed by that of the late Dr. Reid. This gentleman admits that impregnation is more likely to occur immediately after the termination of a menstrual period than at any time during the interval. The next most likely period is immediately previous to the occurrence of menstruation, and the probability of conception becomes slighter as the time is more distant from this epoch. According to Raciborski, from observations made in Paris of one hundred women, no more than six or seven had become impregnated at the mid-term from the menstrual periods. In the opinion of Dr. Reid, if we are to be guided by the number of days which have elapsed between the last appearance of the menses and parturition (this, however, he shows to be a most fallacious guide), there is no period in the menstrual interval at which impregnation may not occur. ('Lancet,' Sept. 3, 1853, p. 206.) In cases of a single intercourse, the dates being certain, conception took place twelve and fourteen days after menstruation; several of these cases occurred within Dr. Reid's own knowledge. It is here assumed, however, that conception is synchronous with intercourse. It may be therefore fairly taken as a fact, irrespective of any modern theories of ovulation, that a woman may conceive from intercourse had at the inter-menstrual period (mid-period), although, in a given number of instances, it is probable that the conceptions would be more numerous within six or seven days after the cessation of the menses than at any other time.

Some of Dr. Reid's observations show the fallacies which may arise by placing confidence in the cessation of the menses as a date for calculating the duration of pregnancy. The wife of a physician, whom he attended, had the last catamenial appearance on November 7, and was confined on August 21 (287 days); no intercourse, however, had taken place until November 18 (276 days). In another case, labour occurred 281 days after menstruation, but 277 days after the first intercourse. One case occurred to him which occasioned some amusement in the end to all parties concerned, owing to the lady having implicitly relied on the date of the catamenia as a guide, without taking into account another circumstance of still greater importance in the calculation. This patient, who had already borne a child, had her last menstrual appearance on July 8; she quickened, *she thought*, about November 7, and her confinement was expected about the 12th of April. The lady's mother travelled 400 miles, at a great inconvenience to her own domestic arrangements, in order to be present at the accouchement; and as day after day passed over without its occurrence, much uneasiness was felt by both parties, and Dr. Reid was sent for repeatedly to allay their fears, and explain the cause of this unexpected delay. The dates were all again carefully compared, and the 8th of July was fixed on as the

proper catamenial point to start from. Dr. Reid could only suggest that impregnation had occurred at a later period of the interval than had been supposed; and at length, on putting the question if the lady's husband had been at home on the 9th of July, he found that he had not returned from an excursion into Scotland until the 23rd of that month. The explanation was now very easy, and the lady was safely confined on April 28. In this case 294 days had elapsed since menstruation, but 279 only from the earliest possible time of conception. ('Lancet,' Sept. 9, 1853, p. 207.)

Recent physiological researches have proved that the date of *conception* is not fixed by the date of *intercourse*. The time occupied by the descent of the ovum along the Fallopian tube varies, while the time required for the passage of the male fluid to meet the ovum is also subject to variation. The investigations of Bischoff and Valentin show that the spermatozoa may retain their movements, and probably their fecundating power, for so long a period as *seven days* within the body of a woman. Fecundation cannot result unless the matured ovum meets these bodies in a living condition: and conception may be regarded, in the language of Dr. Meigs, as the fixation of a fecundated ovum upon the living surface of the mother. These facts will account for some of the variations which are observed in the duration of pregnancy from a single intercourse. Conception may take place either in a few hours, or, according to Valentin's observations, at so long a period as seven days after intercourse. But they do not satisfactorily explain such extreme differences as were observed in the cases of Dr. Rigby and Dr. Reid (thirty-three days), or in those of M. Devilliers (forty-nine days)—*ante*, p. 242. We must therefore be prepared to admit, either that conception may in some cases be delayed for so long a period as from five to seven weeks after intercourse, or that there may be a difference of from five to seven weeks in the duration of pregnancy. Whatever may be the explanation adopted, it is obvious that, in a medico-legal view, the only conclusion at which we can arrive is, that the period of gestation in woman is *not*, as it was formerly supposed to be, a fixed and invariable term.

Great mistakes have arisen in the calculation of the period by the use of the word 'month'—some intending by this a *lunar* and others a *calendar* month. Nine lunar months would be equal to 252 days, while the average of nine calendar months would be 270 days—the latter period varying according to the particular months of the year over which the pregnancy might extend. To prevent mistakes, or that misunderstanding of evidence which has so frequently arisen, it would be advisable that medical witnesses should always express the period of gestation in weeks or days, concerning which there can be no misunderstanding: it would be also proper to adopt the plan of always commencing the calculation from the period of the last cessation of the menses, rather than from two weeks later. The latter rule is often followed, and this is another cause of confusion.

Premature births. Short periods of gestation.—From the preceding remarks we may regard all births before the thirty-eighth week as premature, and all those which occur after the fortieth week as protracted cases; and one great point for a medical witness to determine is, whether the characters presented by a child correspond to those which it should present, supposing it to be legitimately born. When the birth is premature, this sort of corroborative evidence may be sometimes obtained; because, assuming that there has been no access between the parties before marriage, children born at the fifth or sixth month after marriage cannot, if the offspring of the husband, present the characters of those born at the full period. It is not so with protracted births, for children are not more developed in protracted cases than they are in those which occur at the usual period. This would lead to the inference that when

a child has reached a certain stage of development it ceases to grow—a view which is borne out by the observations of Dr. Rüttel. (Henke's 'Zeitschrift,' 1844, p. 247.) This gentleman observed that the size of a child did not increase in proportion to the length of gestation. In protracted human and animal gestation the offspring is not remarkable for size and weight. In both cases robust mothers have had small children, and small mothers strong and sometimes unusually large children. Dr. Murphy states that he met with a fully-developed child which was born after a gestation of only 251 days. ('Lancet,' Nov. 30, 1844, p. 284.) For an account of the characters presented by children at different uterine ages, see INFANTICIDE.

In judging from marks of development on the body of a child, we must make full allowance for the exceptions to which they are liable. The nearer the supposed premature delivery approaches to the full period of gestation, the more difficult will be the formation of an opinion. Although the characters of a seven-months' child, as a general rule, are usually well-marked, and may be known by common observation, it is not possible to distinguish with absolute certainty a child born at the eighth from one born at the ninth month. Burns observes that gestation may be completed, and the child perfected to its natural size, a week or two sooner than the end of the ninth month; and other accoucheurs corroborate this view. (Dr. Murphy in 'Lancet,' Nov. 30, 1844, p. 284.) In a series of cases which occurred to M. Devilliers, the following were the weights of children born at the respective periods:—

229 days . .	4·60 pounds avo.	270 days . .	6·8 pounds avo.
246 „ . .	4·88 „	272 „ . .	7.3 „
257 „ . .	6·68 „	283 „ . .	6·0 „
267 „ . .	7·71 „		

Hence the weight of a child born in the fortieth week may be less than that of another born in the thirty-seventh week of gestation. The weight in the third case may be taken as the average weight of a mature child, and the delivery took place *three weeks* before the usual period. (See 'Gazette Médicale,' 4 Mars, 1848, p. 168.) Thus, then, a child born at the eighth month may be the offspring of the husband—at the ninth month, of an adulterer; but medical facts could not enable a witness to draw any distinction. It is here that moral proofs are necessary; for without these the legitimacy of a child, in such a case, could not be successfully disputed. With respect to twin-children, the greatest differences are sometimes observed. In a case which occurred to Mr. West, the first child born weighed only a pound and a half: the second weighed more than three pounds, and both lived several hours. The uterine age must have been the same. In another premature twin-case which occurred to the same gentleman, one child weighed two pounds and a quarter, and the other two pounds and three-quarters. ('Med. Times,' Feb. 23, 1850, p. 147.)

The fact that a child has had the strength to survive its birth for a certain period has been supposed to furnish additional evidence of maturity, for it is well known that under a certain age children are not born living, or, if living, they speedily die. Therefore it has been argued, if a child born at the fifth or sixth month after the first cohabitation be born living, or survive, this should, *ipso facto*, be taken as a proof of its illegitimacy. The following remarks will, however, show that an argument of this kind is liable to be overstrained:—

Viability.—According to the English law, it is not necessary that a child, when born, should be capable of living, or *viable*, in order that it should take its civil rights. Thus it may be born at an early period of gestation; it may be immature, and not likely to survive; or, again, it may be born at the full period of gestation, but it may be obviously labouring under some defective

organization, or some mortal disease, which must necessarily cause its death within a short time after its birth. Fortunately, these points are of no importance in relation to the right of inheritance: an English medical jurist has only to prove that there was some well-marked physiological sign of *life* after birth (p. 207); whether the child were mature or immature, diseased or healthy, are matters which do not at all enter into the investigation. In this respect our law appears to be more simple and just than that which prevails in France. By Art. 725 of the Code Napoléon, no child that is born alive can inherit, unless it is born, as the law terms it, *viable*. The meaning of this word is not defined by the law itself, and there are probably no two lawyers or physicians in that country who place upon it the same interpretation. The French law seems to intend by viability in a new-born child, that it should have breathed and be capable of living out of the womb of its mother, and independently of her; also, that it should be capable of living for a longer or shorter period after its birth. (Devergie, vol. 1, p. 700; Briand, p. 173.) Dr. Géry defines it to be the aptitude or fitness of a child to maintain extra-uterine life. Most French writers agree in this, but great difficulties occur in applying the principle to special cases, or in fixing upon a standard by which this fitness can be measured. M. Géry does not assign any definite uterine age for viability. The hundred and eighty days allowed by the Code Napoléon are not in his view sufficient. Another month should be added, making the period for viability two hundred and ten days, or about the end of the seventh month. It is clearly impossible to fix a precise date, for all children do not attain the same degree of development or aptitude for living, at the same uterine age. ('Ann. d'Hyg.' 1871, vol. 1, p. 239.) The question of viability or non-viability in reference to new-born children has been lately investigated by Dr. Böhm. (Horn's 'Vierteljahrs,' 1866, 2, p. 80; also 1865, 2, p. 264.)

It would be difficult for any system of jurisprudence to lay down a more vague or incorrect principle than this; and medical witnesses may consider themselves fortunate that in this country they have not to take part in the litigation to which such a principle must necessarily give rise. The effect of the French law is this: a child may be born alive, it may breathe and cry, and survive its birth for a considerable time; yet upon arbitrary medical principles, founded upon the period of gestation at which it was born, on its length, its weight, the colour of its skin, the length of its hair, and the form of its nails, it may be pronounced by experts not viable, *i.e.*, not born with a capacity to live, and therefore not capable of inheriting and transmitting property. Other experts with precisely the same data will be found ready to affirm that the child is viable! But then, again, the child may be externally pronounced viable, and live four or five days; yet, on inspecting the body after death, if disease of the lungs, brain, or any organ which had its origin previous to birth, be found, it may be pronounced the contrary, and the rights of property are thus made to rest upon the most trivial and unsettled conditions. The presumption is, however, in favour of the legal rights of the offspring, when it has been clearly proved that it lived after it was born. The viability of the child is presumed, and those who would then benefit by the allegation of non-maturity must prove it. (Briand, 'Man. Complet de Méd. Lég.' 1846, p. 173.) There may be no disease in the child, yet, owing to its having come into the world prematurely, it may not survive its birth beyond a few days. It may breathe, cry, take nourishment, and manifest all the signs of active and vigorous life; but about the third or fourth day the voice becomes more plaintive, the features more pinched, and the child gradually sinks from want of power to maintain an active and independent existence. Hence it has been suggested that before the eighth day after birth, a medical man is scarcely in a position to pronounce a child born prematurely, to be viable or to have

a capacity to live, like children born in a normal state. ('Critical Inquiry on Superfœtation,' by Dr. Bonnar, p. 14.)

The following case will serve as an illustration of the difficulties presented by this subject to French medical jurists. A question was raised whether a child born on the 26th October, 1870, was born living and viable (*vivant et viable*). An inspection of the body and a report had already been made by two physicians of Narbonne. They found that the body was well-formed and not putrefied. The lungs were healthy. They floated on water, and when divided some portions floated readily, others imperfectly. On pressure of the cut portions, bubbles of air escaped. In their opinion the child was born viable. It was well-organized, and sufficiently developed to allow of the performance of the vital functions. If breathing is regarded as living, this child had lived, but in an imperfect manner. Its death was the result of a protracted labour. ('Ann. d'Hyg.' 1872, 1, p. 110.)

Reviewing these facts and conclusions, M. Tardieu, to whom the case was referred, maintained—1, That the child was not born viable; 2, that although it had lived, it was with fœtal life only; 3, that owing to the protracted delivery, and the great development of the child, its life was not perfectly established, and did not continue after birth. Thus, then, in the opinion of M. Tardieu, to be born viable is, 1, to be born living; 2, to have lived with a life distinct from fœtal or uterine life; and 3, the body should, at the same time, be so formed and developed as to allow of the continuance of life.

The question of viability of course cannot arise in reference to a child born dead. There must be life after birth, and in addition to this an aptitude to live. It would appear from this that all children which survive birth some hours in a state of passive existence (See Atelectasis, *post*) would be pronounced to be living, but not viable children. As a living non-viable child may be the subject of an act of murder, this inconsistency arises:—a person might be convicted and punished for killing a child which had not about it a sufficient degree of life to receive or transmit the common rights of inheritance.

It is stated by M. Devergie, a competent authority, that infanticide, according to the law of France, implies the wilful destruction of the new-born child, whether viable or not. The question here is simply whether the child was born living, and whether violence was wilfully applied to it while it was living. ('Ann. d'Hyg.' 1872, 2, p. 176.) The question of viability is raised only in cases of paternity, succession and inheritance, donations and wills. It is an artificial status created for the purpose of administering the civil law. It places a great responsibility in the hands of medical experts, and practically leaves them to decide whether a child shall inherit or transmit title and property.

It may at first sight appear to be inconsistent with justice that a child which is born immature or labouring under disease, owing to which it cannot long survive its birth, should possess the same rights of inheritance as one which is born mature and perfectly healthy; but this evil to society, if it be admitted as such, is of far less magnitude than the adoption of a system which must constantly lead to subtle casuistical distinctions, and thereby create error and confusion. So long as there is no well-defined line between a child which is considered capable of living and one which is not, gross injustice must necessarily be inflicted by any rule of law similar to that which is admitted in the Code of France. In a recent case an attempt was made to push the doctrine of non-viability to such a degree as actually to include cases of injury inflicted by instruments during delivery; so that by the awkwardness of an accoucheur in the use of the forceps, a well-formed healthy child might, by reason of its death soon after birth, be pronounced *non-viable*. M. Tardieu was consulted in a case of this kind, and by his medico-legal experience he

was enabled to satisfy the parties concerned that the child was perfectly *viable* in a medical sense, and that its death had arisen not from any congenital disease or malformation, but from injuries inflicted by instruments which were necessary to aid delivery. ('Ann. d'Hyg.' 1853, vol. 2, p. 193.)

Earliest period at which a child may be born living.—The question now to be considered in reference to English practice is, What is the *earliest period* at which a child can be born living, and with a capacity to live after its birth and attain maturity? It is universally admitted that children born at the seventh month of gestation are capable of living, although they are more delicate, and in general require greater care and attention to preserve them than children born at the ninth month. The chances are, however, very much against their surviving. It was the opinion of Dr. William Hunter, and it is one in which most modern authorities concur, that few children born *before seven calendar months* (or 210 days), are capable of living to manhood. They may be born alive at any period between the sixth and seventh months, or even, in some instances, earlier than the sixth; but this is rare, and, if born living, they commonly die soon after birth. There is one case on record of a child having been born living so early as the *fourth month* of gestation ('Brit. and For. Med. Rev.' vol. 2, p. 236); and another, in which a woman aborted at the fourth-and-a-half month of pregnancy. M. Maisonneuve saw the woman two hours after delivery: he then found the fœtus in its membranes, and on laying these open, to his surprise it was still moving. He applied warmth, and partially succeeded in restoring it, for in a few minutes the respiratory movements were performed with regularity, but in spite of the establishment of breathing, the child died about six hours after its birth. ('Journal de Médecine,' and 'Med. Gaz.' vol. 39, p. 97.) Mr. Carter, of Richmond, communicated to me the following case which occurred in his practice in November 1865:—He attended a woman who had an abortion when not more than *five months* advanced in her pregnancy. The fœtus cried slightly directly it was born, and during the half-hour that it lived unsevered from its mother, it frequently tried to breathe. The body of the fœtus was one foot in length, and it weighed twenty and a half ounces. It appeared to be perfectly formed. From accurate information, he was satisfied that the woman had not passed the fifth month of pregnancy. In two instances of abortion, about the *fifth* month, Dr. Davies, of Hertford, noticed that the fœtus showed signs of life after its birth, by moving its limbs ('Med. Gaz.' vol. 40, p. 1022); and the following case, in which a child born at the *fifth* month survived upwards of twelve hours, occurred to Mr. Smythe:—A woman in her second pregnancy, and in the 147th day of gestation, had severe flooding with rupture of the membranes. Labour occurred on the following night, when a small but well-formed fœtus was expelled, giving no other indication of life than a feeble action of the heart, and a strong pulsation in the umbilical cord. It was resuscitated, and *cried* as strongly as a child born at the full period of pregnancy. It weighed less than two pounds, and measured exactly twelve inches. It swallowed some nourishment, but died about twelve hours after birth. The membranæ pupillares were entire; the testicles had not descended; the head was well covered with hair. The length and weight, as well as the presence of hair, indicated a fœtus between the sixth and seventh months; but as it is asserted that the period of gestation is accurately given, this must be regarded as an extraordinary instance of premature development. There was clearly nothing in the organization of this child to have prevented its growing to the age of maturity; in other words, it was *viable*. ('Med. Chir. Rev.' July 1844, p. 266.) Another case is reported, in which a child born at five and a half months survived its birth between three and four hours. ('Med. Gaz.' vol. 19, p. 165.) Dr. Routh reports a case in which a child born at this uterine age,

i.e. five and a half months, lived for eighteen days. The child was born in June 1870. It was very small and weakly; its weight was not taken. The duration of pregnancy was twenty-two weeks and two days, or five lunar months and sixteen days. The child died on the eighteenth day after its birth, with symptoms of atrophy. ('Obstet. Trans.' 1872, vol. 13, p. 132.)

On a trial for child-murder (*Reg.* v. *West*, Nottingham Lent Assizes, 1848), a midwife was indicted for causing the death of a child, by bringing about the premature delivery of a woman when she was between the fifth and sixth months of pregnancy. The child in this instance lived five hours after its birth. Capuron mentions an instance in which a child was born at the sixth and a half month of pregnancy, and at the time he reported the case, it was two years old and enjoyed excellent health. In another instance a child was born at the same period, and lived to the age of ten years. ('Méd. Lég. des Acc.' pp. 162, 208.) In a case which fell under my own knowledge, a child was born at the sixth and a half month of gestation, and lived a fortnight. (See another case, 'Med. Gaz.' vol. 32, p. 623.) Capuron considers that a child born at the 180th day, or at the sixth month after conception, may be sufficiently mature to live, *i.e.* that there would be no reason to presume it was illegitimate, merely because it had survived its premature birth. On the other hand, if born before the sixth month, with sufficient maturity to live, this fact, although by no means a proof, affords, in his opinion, a strong presumption of its illegitimacy. Of eight cases of children born living (by abortion) at the sixth month, Mr. Whitehead states that seven perished within six hours after birth, and only one attained to the age of ten days. ('On Abortion,' p. 249.)

Dr. Rüttel, who has examined this subject with great care, states, as the result of his experience, that he attended a married woman, who was afterwards delivered of a living child in the *fifth month* of her pregnancy: the child survived its birth for twenty-four hours. He delivered another woman of twins, in the *sixth month* of her pregnancy: one was dead, and the other continued alive for three hours, its life being indicated only by the visible pulsation of the heart—there was no perceptible respiration. This fact corroborates the remarks made elsewhere, as to life without active respiration (see INFANTICIDE); it has also an immediate bearing on the proofs of life in reference to tenancy by courtesy. (Cases of *Fish* v. *Palmer*, and *Brock* v. *Kelly*, pp. 208, 210.) In another instance of the birth of male twins, at the *sixth month*, each weighed three pounds. Dr. Rüttel saw them a year after their birth, and they were then two healthy strong children. (Henke's 'Zeitschrift der S. A.' 1844, p. 241.) Dr. Barker, of Dumfries, met with a case in which a female child was born at the 158th day of gestation, or twenty-two weeks and four days after intercourse. The size and weight of the child corresponded with the period at which it was born: it weighed one pound, and measured eleven inches. It had only rudimentary nails, and very little hair on the back of the head; the eyelids were closed, and remained closed until the second day; the nails were hardly visible; the skin was shrivelled. The child did not suck properly until after the lapse of a month, and she did not walk until she was nineteen months old. When born, the child was wrapped up in a box, and placed before the fire. Three and a half years afterwards this child was in a thriving state and healthy, but of small make; she weighed twenty-nine pounds and a half. ('Med. Times,' Sept. 1850, p. 259; also Oct. 12, p. 392.) Mr. Annan, surgeon, of Kinross, has reported a case in which a child was born between the end of the sixth and the middle of the seventh month, and lived for a period of four months and eight days; it weighed a pound and a half when seven days old. ('Med. Times,' Sept. 9, 1848, p. 304.) In a case which occurred to Dr. Outrepont, of Bamberg (reported in Henke's 'Zeitschrift,' vol. 6),

there was the strongest reason to believe that gestation could not have exceeded twenty-seven weeks. The child (a male) weighed, when born, one pound and a half, and measured thirteen and a half inches. The skin was covered with down and much wrinkled; the limbs were small; the nails appeared like white folds of skin, and the testicles had not descended. It breathed as soon as it was born, and by great care its life was preserved. It is singular that its development was very slow until it had reached a period which would have corresponded to the forty-second week of gestation. Dr. Outrepont saw the child when he had attained the age of eleven years, and then he appeared to be of the size of a boy of eight years. The only remarkable point about the case is the length of time which the child lived. In a case quoted in the 'Lancet' (Aug. 23, 1851, p. 177), a child born at six months and ten days was thriving satisfactorily when four months old. (See also 'Med. Times,' Feb. 16, 1850, p. 129.) A gentleman of a well-known family in Scotland was undoubtedly born before the seventh month. When first born the child weighed three pounds. As a child he was not expected to live, but he grew up a small strong man, capable of great mental and bodily exertion. He died from natural causes at about the age of 42. His head throughout life was large in proportion to his size.

Hence it is established that children born at the seventh, and even at or about the sixth month, may be reared, and that the fact of their surviving for months or years cannot be taken as evidence of illegitimacy. In forming our judgment on these occasions, we are bound to look less at the period at which a child is born, than at the marks of development about the body. The case reported by Mr. Smythe is corroborative of this view (p. 250). Dr. Bonnar has recently published a tabulated view of 112 cases of premature births of living children,—the dates of gestation extending from the 120th to the 210th day. Among these cases 35 children died within the first twenty-four hours; 13 more before the completion of one week; 1 in six weeks; 4 in four months. The following lived, or were living at the date of the report:—1, seven-and-a-half months; 8, from one to two years; 1, three-and-a-half years; 5, from ten to fifteen years; 6 to adult age; 5 lived not stated how long. ('Critical Inquiry regarding Superfœtation,' 1865, p. 13.)

The medico-legal bearing of these facts will be seen from the following case known as the *Kinghorn case*:—In October 1835 an investigation (*fama clamosa*) took place before one of the Presbyteries of Scotland, in reference to certain reports which had been circulated to the prejudice of a minister of the district. The marriage of this gentleman took place on the 3rd of March 1835, and his lady gave birth to a female child on the 24th of August following—*i.e.* 174 days, or nearly *six calendar months*, after the marriage—and the child continued to live until the 20th of March, 1836. When born it was very weak, and according to the evidence of the accoucheur and others who saw it, it was decidedly immature. The birth of a living child, together with the fact of its surviving for so long a period, led, however, to the report that there must have been intercourse between the parties previously to marriage: it was contended that the period was too short for the child to have been begotten in wedlock. Dr. Hamilton of Edinburgh, on being applied to by the Presbytery, said that his own experience was opposed to the probability of a child born at the sixth lunar month surviving (the time in this case was six lunar months and six days); but he referred to two cases, in which children born under similar circumstances had survived their births for a long period. In one the lady was delivered within five lunar months (twenty weeks) after the marriage, and Dr. Pitcairn and others gave it as their opinion that it had been begotten within wedlock: in the other, a woman gave birth to a child nineteen weeks *after conception*, and it lived a year and a half. Dr. Thatcher, who examined

the child, in the case here reported, nineteen days after its birth, gave it as his opinion that it might have been begotten on or after the 3rd of March; and the circumstance of its having been reared, in the premature state in which it was born on the 24th of August following, was no objection to this opinion. He considered the complaint made against the minister groundless. The case went through several appeals, and was not finally decided until May 1839, when the libel was found *not proven*, and the defendant was absolved from censure. Many medical witnesses gave evidence on the occasion: the majority of them were strongly in favour of this having been a legitimate and premature birth. (See 'Record of Proceedings,' &c. Edinburgh, 1839: 'Med. Gaz.' vol. 17, p. 92; also 'Med.-Chir. Rev.' vol. 31, p. 424.)

Although not connected with the medical part of the case, it should be observed that the character of the parties was free from all suspicion, that no concealment had been practised by them, and that no preparation had been made for the early birth of the child. There were, it is true, *unusual marks of development* about the child, considering the early period of its birth; yet these were not sufficient, any more than the fact of its surviving, to induce the belief that it had been begotten out of wedlock. One case has been already mentioned in which a child, born at a still earlier period, survived several hours, and others in which children born rather later lived for two and ten years. It would be in the highest degree unjust to impute illegitimacy to offspring, or a want of chastity to parents, merely from the fact of a six-months' child being born living and surviving its birth. There are, indeed, no justifiable medical grounds for adopting such an opinion,—a fact clearly brought out by a question put to Dr. Campbell, the chief medical witness in favour of the alleged antenuptial conception. In his examination-in-chief he admitted that he had himself seen the case of a six-months' child who had survived for *several days*. He was then required to say whether he could assign any reason why, if after such a period of gestation it is possible to prolong life for *days*, it should not be possible to extend it to *months!* He could give no satisfactory reply. ('Record of Proceedings,' &c. p. 55, and *post*, p. 849.)

The great injury which may be done by speculative medical opinions, such as those given against the chastity of the parties concerned in these proceedings, will be apparent from the record of a case which occurred subsequently to Dr. Halpin, of Cavan, in 1845. A healthy woman, æt. 34, the mother of five children, was delivered in the *sixth month* of her pregnancy of a female child. It was rolled in flannel, and laid in a warm place; contrary to expectation, the child survived, sucked vigorously, and was healthy in every respect. The ossification of the bones of the head was very imperfect, and the sutures broad enough to admit of the middle finger being laid between them, while the fontanelles were of correspondingly large size. The weight of the child, on the fourth day after birth, was two pounds thirteen ounces, and on the thirty-fourth day three pounds seven ounces. The child was alive and well when last seen on the 4th of March, *i.e.* four months after birth: she then weighed eight pounds eight ounces. After this Dr. Halpin lost sight of her, as the mother left that part of the country. ('Dublin Quarterly Journal,' May 1846, p. 563; see also Dr. Barker's case, *ante*, p. 251.) If the facts of these cases be compared with those of the Kinghorn case, it will be seen that there were no just medical grounds for the allegation that in the latter the child had been begotten out of wedlock. In these two cases six-months' children were living and healthy after four months and three-and-a-half-years, respectively: in the Kinghorn case, it was supposed that the child must have passed the sixth month of uterine life, because it had survived seven months! In Dr. Halpin's case the child, four days after birth, weighed two pounds thirteen ounces—a six-months' child rarely exceeding two pounds: in the Scotch case it was consi-

dered that it must have been much beyond the sixth month, because a fortnight after its birth it weighed three pounds! These cases should be borne in mind when much reliance is placed upon the appearance presented by children as positive evidence of the stage of uterine life which they are supposed to have attained.

CHAPTER 68.

LEGITIMACY—EVIDENCE FROM THE STATE OF DEVELOPMENT—CAN FULLY DEVELOPED CHILDREN BE BORN PREMATURELY?—PROTRACTED BIRTHS—LONG PERIODS OF GESTATION—LONGEST PERIODS YET KNOWN—PERIOD NOT FIXED BY LAW—LEGAL DECISIONS ON THIS SUBJECT.

Evidence from the state of development.—The fact that a child born at nine months is small, and resembles in size and weight a seven or eight-months' child cannot be taken as a proof of illegitimacy. It has been already stated, that children born at the full period vary considerably in size and weight; yet, although small, there are commonly about them the appearances of *development.* This is especially apparent in the features. If there is a general want of development in the body, and if certain fœtal peculiarities remain,—as, for example, the membranæ pupillares, or, in the male, the testes do not occupy the scrotum—these facts lead to a strong presumption that the child has not reached the full period. On the other hand, when a child is born with the full signs of maturity about it, at or under seven months, from possible access of the husband, then there is a strong presumption that it is illegitimate. In the Scotch case related at p. 252 *ante*, the child was more developed than such children commonly are at a similar period of uterine life, but the differences were slight. The great progressive stage of development is considered to be during the last two months of gestation—the changes which the fœtus undergoes are greater and more marked at this than at any other time. The general opinion is that an eight months' child is not with any certainty to be distinguished from one born at the ninth month. If the body of a child is large and fully developed, it would in a general way be considered to have been born at the full period of gestation, and any opinion which had led to the supposition that it was a seven months' child, would be attributed to some mistake in the calculation. Dr. Beck states it as barely possible that a child born at seven months may *occasionally* be of such a size as to be considered mature, yet he qualifies this statement by the remark, that the assertion is most frequently made by those whose character is in danger of being destroyed. The important question, however, is—Has a really seven-months' child ever been born so developed as to be mistaken by an experienced person for one that was mature? He adduces no case of this kind in support of his opinion. There can be no doubt of the correctness of his statement, that a *mature* child, born *before* seven full months after intercourse, ought to be considered illegitimate: but it would be difficult to maintain this position, consistently with the above admission, for a child may acquire premature development during the latter half of the sixth as well as at the seventh month.

The following case in reference to development (at seven months) has been communicated to me by one of my pupils: it is well calculated to show the characters of a seven months' child, and to corroborate the views adopted by physiologists respecting the means of determining the period of uterine life which the fœtus may have reached:—Mrs. F. was married on the 7th April *1846, and was* delivered by my informant of a male child at 7 o'clock on the

evening of the 19th October following, the period of gestation being equal to 195 days, or twenty-eight weeks. The infant cried strongly, and lived until 9 o'clock the following morning; the skin was of a deep pink or rose-colour, beautifully soft and covered with a fine down. The membranæ pupillares were absent, and the pupils were well formed,—the nails were complete,—the testicles had *not* descended into the scrotum,—the length of the body was fifteen inches, and its weight two pounds eight ounces. Its weight, and the non-descent of the testicles, at once referred it to a uterine age of seven months. In addition to the other characters assigned to children born at the seventh month (see INFANTICIDE), it may be observed that children at this uterine age do not so readily take the breast as those which have reached the ninth month, and their power of sucking is much more feeble.

Several cases have occurred in the Divorce Court, before the Judge Ordinary, in which the power of a medical man to form an opinion of uterine age from the appearance of a child at birth, between the *seventh* and *ninth* months has been seriously called in question. In *Stone* v. *Stone* and *Appleton* (1864) the evidence showed that the husband (the petitioner) went to India in August 1859, and that he returned to England in May 1861, and joined his wife on the 18th May. The wife (the respondent) was delivered of a full-grown child on the 2nd January 1862, and the delivery at this date was assumed to be conclusive proof of adultery on her part. She was attended by a medical man, who deposed that in his opinion the child was full-grown, *i.e.* a nine months' child. Another medical man, who saw the child two or three days after its birth, also considered it to be full-grown. In comparing the date of possible access of the husband with the date of birth, the period of gestation would be 229 days, or seven weeks and two days short of the average period. The medical question was,—Could this be the child of the husband? On the part of the respondent, it was alleged that the child was a seven-months' child prematurely born, and more than usually developed for its age; and evidence was given to show that in her previous deliveries the children had been prematurely born. The evidence of obstetric experts was also called to prove that any medical opinion based on the maturity or immaturity of the child was of no value. Dr. Tyler Smith and Dr. Samuel Richards were examined, in order to show that children of between seven and eight months were frequently the same in appearance and in size as children born at the full period of nine months, and that any opinion formed from the inspection of a child after its birth as to the date of its conception, was very fallacious. They stated that out of a number of cases an experienced surgeon would be able to say with tolerable certainty in the majority, whether a child was a seven or eight or nine months' child, but he would probably be mistaken in several cases; and they stated their reasons for their opinions, and mentioned cases in support of them. They also said that illness, bodily weakness, and mental anxiety tended to produce premature delivery, and that a woman who had once been prematurely delivered had a tendency to premature delivery if she afterwards became pregnant. Dr. Tyler Smith said that the data on which a judgment could be formed, varied so much that no positive or reliable opinion could be given. If the reputation of a lady depended on his opinion, in such a case he should refuse to give it, and if he did give an opinion at all it would be with so many reservations and exceptions that there would be no certainty in it. The jury returned a verdict for the petitioner, finding that the wife had been guilty of adultery; therefore that this was not the child of the husband, *i.e.* it was not a seven months' child.

In another case (*Wool* v. *Wool*, March, 1865) the adulterous intercourse was stated to have taken place in May, 1864, and a child was born on the 1st January 1865, giving 246 days (or thirty-five weeks and one day) for gestation,

i.e. about five weeks earlier than the average period. In this case the late Mr. Tubbs, of Upwell, made an accurate observation of the state of the child. It was 19½ inches long; its weight was six pounds; the hair was fine and long; the nails reached to the finger-ends; the testicles were in the scrotum; the features were well-developed; the skin was reddish-coloured, but the muscles were not so firm as in mature children. This degree of development is such as is usually seen in children born at the full time, but at the same time it is not inconsistent with the period of gestation above-mentioned—namely, about eight calendar months: it therefore falls under the exceptional cases referred to at p. 254.

In *Bromwich* v. *Waters* (Chester Lent Assizes, 1863), in which Dr. Robert Lee, the late Dr. Ramsbotham, and myself were consulted, the question incidentally arose upon an alleged gestation of 259 days. It was stated that intercourse took place upon the 9th November 1861, and a child was born on the 26th of July, 1862, a period of 259 days, or thirty-seven weeks. The child had the appearance of a mature child. The counsel for defendant admitted that a child born at this period, *i.e.* three weeks before maturity, might be as large as one born at the ninth month, but he denied that it would be so perfectly developed in all its parts. This distinction is not generally admitted: and when the question was put to the late Sir J. Simpson of Edinburgh, who gave evidence at the trial in favour of the defendant, he said that full size was generally combined with full development; and he further stated that it was against all the laws of nature that children should be born full-grown even a fortnight before the usual term of gestation, which he fixed at nine calendar months and a week. According to this view, if impregnation took place on the 9th November, 1861, the day of probable (?) delivery would be a week after the 9th of the following August, *i.e.* the 16th August. Hence, as the child was actually born in a *mature state* on the 26th July, this was three weeks before the usual term; and therefore impregnation from some other person had probably taken place three weeks earlier than the period assigned by the woman (Whalley). Sir J. Simpson considered it to be as rare that a child should be born full-grown three weeks before the usual period, as that a man should attain one hundred years of age! ('Report of the Trial of *Bromwich* v. *Waters*,' 1863, p. 33.) There are not many medical witnesses, however, who would venture to affirm that in the last three weeks of gestation there are such marked changes in the body of a child as to render this difference in time always perceptible, or who would venture to bastardize a child or convict a woman of adultery because, when born at the 259th day after intercourse, the child had about it the usual appearances of maturity. This would be equal to affirming that variations in size might take place at the ninth but not at the eighth month of gestation. But facts are adverse to the theory. Dr. Rüttel, an experienced observer, has met with several instances in which women have been delivered two and even three weeks before the expiration of the ordinary term (280 days), and the children were as perfectly developed, to all appearances, as other children which had been born at the full period.

A case was tried in the Common Pleas in 1846, in which I was consulted on the part of the defendant (*Hargrave* v. *Hargrave*). The plaintiff contended that he was the child of John Hargrave, deceased; the defendant, that he (the plaintiff) was the illegitimate offspring of the same mother, but not the son of John Hargrave. The evidence in support of the illegitimacy was, as usual, partly medical and partly moral. The husband and wife had been separated for a considerable time prior to the birth of this child, and he chiefly resided in France. The wife resided in London, as it was alleged, in adulterous intercourse with another person. The plaintiff was born on the 18th November 1836; and it was argued, for the defendant, that there was no possibility of access on the part of the husband, except at periods which would fall far short

of, or go much beyond, the limits of human gestation. Defendant alleged that the husband was absent from London from October 1835 to about the latter end of April or beginning of May 1836: hence, in order that the child should have been begotten by him, this must have been a case either of *thirteen-months'* or *seven-months'* gestation. The former supposition was out of the question: it became, therefore, necessary to ascertain whether this child when born was *mature*, or whether it bore about it the characters of a seven-months' child. On this important point there was no satisfactory medical evidence. The delivery had taken place ten years before—the practitioner who had attended the female had no distinct recollection of the circumstances—he could not even remember the sex; and the only fact to which he could depose was, that when the child was born he observed nothing particular in its appearance—it did not differ from other children; and, in answer to a question from Lord Chief Justice Tindal, he said that there was but little difference between a seven-months' child and a nine-months' child, and one might be mistaken for the other. No observation was made as to the descent of the testicles or other peculiarities; and, in short, it remained as a mere presumption whether, from the attention of the witness not having been particularly drawn to its condition, the child was not in fact mature.

Additional evidence was produced by the plaintiff at the trial to show that the husband had been in London at other periods than those alleged by the defendant. Thus, it was stated, by some of the witnesses, that he was there in February 1836 (making the period thirty-nine weeks and three days), again on the 3rd March (making it 259 days or thirty-seven weeks), and again on the 3rd May (making it 198 days or twenty-eight weeks and two days). In his charge to the jury, the learned judge (Tindal, C.J.) threw out the latter period, and directed them, if they believed the evidence, and that there had been possibility of access at either of the two former periods, to find for the plaintiff. According to the medical evidence, whether the time was seven, eight, or nine calendar months, it would make but little difference in the appearance of the child. A verdict was returned for the plaintiff, establishing his legitimacy; but there was so much doubt about the case that, in November 1846, Lord Langdale granted a new trial, making at the same time the following remarks:—'Cases of this kind are very difficult to determine, and, but for rules and presumptions of law, it would often be impossible to arrive at any satisfactory conclusion. A child born of a married woman is presumed by law to be legitimate, but this presumption may be removed by evidence. It is not enough, however, in order to rebut it, that suspicious circumstances should be shown; but it is necessary to show circumstances, such as impotency or absence, from which it would clearly appear that sexual intercourse could not have taken place. It is difficult to conclude against legitimacy, in the absence of this evidence, where some association has continued between the parties, so as to afford an opportunity for intercourse. If the husband and another man had had opportunities of intercourse, whatever might be the probabilities, no evidence could be admitted to show that the husband was not the father of the child. Evidence against legitimacy ought to be strong, distinct, satisfactory, and conclusive. In the present case it appears that the husband had, for some years previous to the birth of the plaintiff, usually resided in France, but that he was in the habit of coming to England from time to time, and that he had had occasional interviews and communication with his wife; and whether they were of such a nature as to enable him to be the father of the plaintiff, was the question at issue. The plaintiff was born on the 18th November 1836, and the question is whether the husband had had an opportunity of intercourse with his wife in the early part of that year. There is evidence that he had been in England at particular times,

viz. January, March, April, and May in that year, and it is clear that he was *intra quatuor maria.* Then the question is, whether, although he was in England, he could be supposed to have had intercourse with his wife. Two witnesses have said they saw a person go into Mrs. Hargrave's house in the latter part of 1835 or beginning of 1836, and in February 1836, and that she had afterwards said that that person was her husband. In March 1836 Mr. Hargrave was at the Ship Tavern, and informed the waiter that he would bring his wife with him next time. He accordingly came in May with a lady, and they lived together as man and wife. The keeper of the tavern knew him, as he used to be there several times a year, and had seen Mrs. Hargrave in the house with him; but he did not know what lady was with him in 1836. Then it is not proved that the visitor in February was the husband, nor that Mrs. Hargrave was the person who went to the hotel with him in May. There was no concealment, however, made by the wife of her pregnancy or of the birth of the plaintiff; and six or seven months after his birth, his mother had him baptized by the name of John Robert Hargrave, the son of John and Mary Hargrave. I find nothing in the circumstances of the separation, or in the character or conduct of Hargrave, which renders intercourse in any degree improbable, nor does the alleged course of life of either make any difference. Even the alleged adultery of the wife, if proved, would not affect the question; and if I were bound to decide on the present state of facts, I would decide in favour of the legitimacy. As, however, there is some obscurity in the case, and there may be additional evidence produced, I think there ought to be a new trial, although I do not agree to the grounds on which the application has been made. I am the more inclined to grant this, as the Lord Chief Justice had latterly some doubts about the verdict being in accordance with the evidence, and the unfortunate death of that distinguished judge has prevented a revision of the case, which otherwise might have been made.' ('Law Times,' Nov. 21, 1846.)

At the second trial, which took place in the Common Pleas on the 22nd June 1848, direct evidence was adduced by the defendant to show that the husband was absent during the first two periods; and as it was admitted on both sides that the child was mature, the period of the end of April or beginning of May was considered to be inconsistent with its being the offspring of the husband, since this allowed only of a seven-months' gestation. Williams, J., who tried the case, left it to the jury—1st, whether entire absence on the part of the husband, at the only two periods at which he could in the course of nature have been the father of the child, had been clearly proved; and 2ndly, if not proved, and they thought that the husband might have had access to the wife, whether from the evidence he had availed himself of those opportunities. The jury returned a verdict for the defendant, thus finding the plaintiff illegitimate. As if to show the great uncertainty attending suits of this kind, from conflicting evidence or the suppression or concealment of material facts, a third trial took place on the same issue in December 1850, when a verdict was returned for the plaintiff, again establishing his legitimacy, and thus restoring him to the position which he held by the verdict of the jury at the first trial.

In reference to the question of development we find, on the one hand, some obstetric experts affirming that such a degree of maturity may in some exceptional cases be acquired at *seven months'* gestation as to render it impossible to distinguish the child at birth from one born at the full period; and, on the other hand, obstetric experts of equal experience assert that it is against all the laws of nature that children should be born full-grown even only three weeks before he usual term. If the latter view were correct, there could be no difficulty in deciding, from appearances, whether a child had reached the seventh or the ninth month of gestation.

In another part of this work (*Uterine age*—INFANTICIDE), some cases are related which prove that at the ninth month, children are occasionally born of a size and weight greatly exceeding the average. Thus a nine-months' child has been born weighing eighteen pounds and measuring thirty-two inches, whereas the usual weight is from six to seven pounds, and the length eighteen inches. In such an exceptional case, there is reason to believe that had the child come into the world at the seventh month, it would then have appeared to the accoucheur to have reached the full term. As it is impossible to say when such an exception is likely to occur, and a lawyer is always entitled to take advantage of either extreme, it follows that in any case in which this question arises, a witness will be bound to admit that a seven-months' child may be born of the average size and weight of a nine-months' child, or to give some valid reason for the fact that great variations in size and weight may occur at the ninth but not at the seventh month of gestation. If the child is a male, and the testicles are found in the scrotum, there is every reason to believe that it has passed the seventh and even the eighth month of uterine life. (See INFANTICIDE.) The differences of opinion among obstetric experts in reference to this question admit of an explanation. All will agree that, as a general rule, a seven-months' child might be distinguished from a nine-months' child, unless the latter was a twin; but at the same time it must be admitted that if variations in development take place at the full term, there is nothing to prevent such variations from occurring at the seventh and eighth months of gestation. Dr. Hicks informs me that he has seen a child born seven months after marriage as large as at the full term; but, as he suggests, this child might really have been born at the full term. In order to determine this point by unexceptionable facts, it would be necessary to collect a series of cases of impregnation from one intercourse in which the children were born seven months after such intercourse, and were proved to have had the average size and weight of mature children. In the meantime counsel will care little for the rule, but will take advantage of the existence of admitted exceptions.

When the facts are such, that to be the offspring of the husband it must be a *six-months'* child, and it is born *mature*, there can be no reasonable ground to doubt its illegitimacy. This question was raised in the Exchequer Sitting (January 1847), on a motion for a new trial in the case of *Eager* v. *Grimwood*. The action was one for seduction; and the principal witness in the cause, a young woman, on being cross-examined, stated that she was first connected with the defendant a few days before Christmas 1845, and that the birth of the child took place in the June following—*i.e.* in about six calendar months. Under these circumstances, as the child appeared to have been full-grown, the Chief Baron, assuming the statement of the dates to be correct, intimated it to be his opinion that the action could not be maintained, as the foundation of it was the loss of service, arising from the defendant's intercourse with the daughter, and her subsequent confinement, and that it was impossible that he could have been the father of the child in question. The jury found for the defendant. A rule for a new trial was granted, chiefly on the ground that the woman had, from confusion in giving her testimony, made a mistake in the period. A similar question may arise in cases of divorce, and the fact be received as proof of the act of adultery. In the case of *Maclean* (House of Lords, March 1851), it was proved that the earliest intercourse which could have been had with the husband was on the 22nd December 1847; while, according to the medical evidence, the child was born on the 6th July 1848, thus giving a gestation of only 197 days, or twenty-eight weeks and one day, assuming the husband to have been the father, but the child was a full-grown nine-months' child. This fact was received as a proof of adultery on the part of the wife. Dr. Wachs met with a case in which a child to be legitimate must have been

begotten 196 days, or twenty-eight weeks before birth; but the child was fully developed and mature. It appeared like a nine-months' child, and it was denied that it could have been the result of a conception of only 196 days. (Horn's 'Vierteljahrsschrift,' 1870, 2, 77.) In *Heathcote's* case (March 1851), it was proved that the husband returned on the 24th November 1849, and the wife was delivered of a full-grown and mature child on the 18th May 1850, an interval of only 175 days. This was also taken as proof of the alleged adultery. In *Hawkins'* case (May 1852), it was proved that there had been no access of the husband, owing to his absence, between the 16th May 1850 and the 23rd March 1851. A full-grown and *mature* child was born on the 2nd June 1851: hence, to have been the child of the husband, gestation must have been extended to a year and sixteen days, or reduced to a period of only seventy-one days. This was taken as clear proof of adultery on the part of the wife. It is to be remarked of this case that the husband had slept with his wife after his return, even up to five minutes of the time of her delivery, without suspecting his wife's pregnancy; and her female attendant, who had been in the habit of seeing her daily, did not observe any alteration in her personal appearance. This created a little difficulty in the case; but it merely serves to show, either that a visible prominence of the abdomen is by no means a constant accompaniment of the pregnant state, or that it may be very easily concealed.

Protracted births. Long periods of gestation.—The questions connected with retarded gestation have given rise to considerable discussion in legal medicine. That gestation may be retarded or protracted beyond the fortieth week is now, I believe, not disputed by any obstetric writer of reputation. Some accoucheurs have denied it, because they have not met with such cases; but the medico-legal relations of such questions do not depend upon the solitary experience of practitioners. It is only by the accumulation of well-ascertained facts from all authentic sources that medical knowledge can be made available for the purposes of the law; otherwise, owing to the mere accident of a witness not having met with any exceptional instance, a Court may be entirely misled in its judgment by trusting to his opinion. It is the more important to attend to this, because most of the cases involving questions either of contested legitimacy, or the chastity of females, turn upon protracted rather than upon premature delivery.

In standard works on midwifery will be found authentic reports of cases in which gestation continued to the forty-first, forty-second, forty-third, and even to the forty-fourth week. Dr. Murphy regards 301 days, or forty-three weeks, as the average limit of gestation. ('Obstetric Report,' p. 4.) Dr. Lee met with a case in which he had no doubt that the pregnancy lasted 287 days: the labour did not take place until forty-one weeks after the departure of the husband of the lady for the West Indies. ('Med. Gaz.' vol. 31, p. 917.) Dr. William Hunter met with two instances in which gestation was protracted until the forty-second week. Dr. Montgomery met with a case in which delivery did not ensue until between the forty-second and forty-fourth weeks. ('Med. Gaz.' vol. 19, p. 646.) Dr. Merriman has published a valuable table on the subject of protracted gestation, on which the most experienced accoucheurs have been in the habit of relying. Of 114 pregnancies, calculated by him from the last day at which the women menstruated, and in which the children appeared to be mature, the following were the periods:—

In the 37th week	3	In the 41st week	22
„ 38th „	13	„ 42nd „	15
„ 39th „	14	„ 43rd „	10
„ *40th* „	33	„ 44th „	4

Another well-marked case, occurring forty-four weeks precisely after the cessation of the menses, has been communicated to me by Dr. S. W. J. Merriman.

From these results Dr. Merriman considers that in the greater number of women gestation is completed in the fortieth week from the cessation of the menses, and next to this period in the forty-first. In the evidence given by this gentleman before the House of Lords in 1825, the case of longest protraction on which he was able to rely was that of a married woman, who was in the habit of calculating from the last day on which her monthly period ceased. The lady was delivered 309 days, or forty-four weeks and one day, from the time at which she supposed that she had conceived. In another case mentioned by Dr. Merriman, the period was 303 days, or forty-three weeks and two days from the termination of the last monthly period. It was objected to this evidence, by the Attorney-General, that it was impossible to fix the exact date of conception, and, as the female might have really conceived only a day or two before the expected return of menstruation, twenty-eight days (or four weeks) should be deducted from the periods assigned by the witness. Admitting the validity of this objection—and the fact upon which it is based is indisputable—it followed that the longest-protracted case observed by Dr. Merriman might have really been only a case of ordinary gestation extending to forty weeks and one day. An objection of this kind may of course be successfully urged in law to any inference from a calculation so made, and it was thus that in the Gardner Peerage case the medical evidence failed to render it certain that gestation might be so protracted as to support the legitimacy of the claimant. It is therefore obviously of the greatest importance, in considering this question, to make full allowance for possible error; and, in calculating the pregnancy from the last day of the last menstrual period, to deduct the interval of menstruation, if known, and at least twenty-eight days if unknown. It must be remembered that in these cases of contested legitimacy the offspring is commonly the result of a *single* intercourse. The date of conception is therefore fixed within limits already described (*ante* p. 244); and a comparison can be instituted only between the period of gestation thence deduced, and the periods taken in other cases which are equally free from any error.

A well-marked case of gestation passing beyond what is commonly set down as the average period has been communicated to me by Mr. Howell, of Walton-on-Naze. This occurred in a healthy woman, æt. 30, who had borne three children, the youngest being 4 years old. She had menstruated with regularity up to the third week in June; the menses then stopped without any apparent cause. Her delivery took place 323 days after their last appearance. Allowing that impregnation occurred at the intermenstrual period, this would make the gestation 209 days; or assuming that impregnation did not occur until twenty-eight days from the date of the last menstruation, this would make the period 295 days, or forty-two weeks and one day. Dr. Murphy, of University College, has also furnished me with some facts in reference to this subject. Out of 182 cases, in which special enquiries were made of the women, the deliveries took place from the date of the last appearance of the menses at the following periods in weeks. The details are given in his 'Report of the Obstetric Practice of University College Hospital for 1844':—

In the	33rd	week		5	In the	40th	week	25
„	34th	„		3	„	41st	„	32
„	36th	„		6	„	42nd	„	25
„	37th	„		11	„	43rd	„	19
„	38th	„		12	„	44th	„	9
„	39th	„	(9 months)	24	„	45th	„	11

The most protracted of the cases in his table was No. 182; the period of gestation was 329 days, or, deducting twenty-eight days (the ascertained menstrual interval), 301 days, or forty-three weeks—*i.e.* three weeks beyond the usual period. Dr. Hedrich mentions, in the 'Neue Zeitschrift für Geburtskunde,' the case of a woman whom he attended in her first labour, who was delivered on the 309th day after intercourse. ('Am. Jour. Med. Sci.' July 1845.) Dr. Beck reports a case which occurred in the United States in 1840, in which gestation was alleged to have been protracted to 313 days, or forty-four weeks and five days; and Dr. Murphy describes two cases which fell under his own observation, in one of which gestation was carried to 314, and in the other to 324 days. ('Obstetric Report,' 1844.) He subsequently met with a third case, in which, making due allowance for all the usual sources of error in the calculation, gestation occupied a period of 323 days. Dr. S. W. Merriman has given me a reference to a case, reported by Dr. Power in his work on 'Human Pregnancy,' in which gestation is said to have extended to 325 days.

In 1865, Mr. Pearse of Tavistock requested my opinion on the following case. The wife of a labourer who went to America on May 6, 1864, was confined on March 24, 1865—*i.e.* 322 days after the departure of her husband. The woman had already had four or five children, and had uniformly borne a good character. The infant was mature and well-formed, the mother a fragile, delicate person, and was suckling a child when her husband left her. She had a good time. Was this child the child of the husband? On being informed of the facts, the man said he was willing to give his wife the benefit of any reasonable doubt, but otherwise he would not return home or acknowledge the child as his. As this case did not exclude a possible act of adultery, the opinion given was adverse to the claim of legitimacy. When the cases involve such unusually long periods of gestation, we must look with great suspicion on all the alleged facts. We must take nothing for granted. It is far more probable that this woman had had intercourse with some man about the 20th June 1864, than that this child was begotten by the husband in the month of March previously. According to the observations of Dr. Murphy and others the time is not impossible, but unless the facts absolutely exclude subsequent intercourse, the case proves nothing as to protracted gestation. Among other cases which have been communicated to me by former pupils, I select the following, which occurred under the observation of Mr. Chattaway, of Knighton:—A healthy woman, æt. 36, the wife of a farmer, applied to him to attend her in her confinement, which she expected to take place in September 1856. The menses appeared for the last time in December 1855, and she quickened in the beginning of April 1856. About the middle of September (*i.e.* on the 283rd day, dating from the last menstruation), Mr. Chattaway was summoned to attend her, and he found her labouring under severe false pains; there was also a discharge of mucus tinged with blood. The case went on until the 19th November 1856, when the patient was delivered of a female child of the average size. It would thus appear, according to the ordinary mode of calculation, that deducting twenty-eight days from the last appearance of the menses, gestation was protracted in this instance to 330 days, or forty-seven weeks and one day. Mr. Carey has reported to the 'Lancet,' 1873, 1, 293, the case of a primipara, æt. 32, whose gestation extended, as he believed, to 350 days. This was, however, a matter of inference from circumstances which might admit of another interpretation.

These cases, assuming the facts to have been correctly observed and reported, meet the objections taken to the medical evidence in the Gardner Peerage case. All women may not have such unusually protracted pregnancies, —*indeed, it is well* ascertained that no two women are alike in this respect, and

that two successive pregnancies in the same woman are rarely alike in duration. Then, again, some medical men may not have met with protracted cases; but the fact being clearly ascertained in one case, it is unnecessary to search for more, unless we doubt the credibility of reporters well qualified to observe, and who have no conceivable motive to misrepresent the medical facts which came before them. On this part of the question I think it is unnecessary to argue. The advocates of a fixed and limitable period differ from each other by a space of at least ten or twelve days, and each must either take his own experience for the final decision of this question, or it must be allowed that men of equal powers of observation and experience with themselves, have met with cases which have gone beyond their own fluctuating limits.

Protracted cases of gestation are always open to the objection, either that the menstrual function may have been suspended from some hidden morbid cause, one or two months before the actual date of conception, or that there may have been some error in the calculation by which the period has been determined. If, however, the objection be admitted under these circumstances, it would be only equally just to admit that in any given case the ordinary and so-called fixed period, calculated from the cessation of menstruation, is based on a fallacy. The menstrual function may have accidentally ceased, or continued for several intervals after conception, and thus a corresponding change should be made in fixing the ordinary period of gestation. This view of the question implies that no reliance can be placed on the date of the cessation of the menses as evidence of the actual duration of pregnancy, whether natural, premature, or protracted. My colleague Dr. Hicks informs me that he met with a case in which the pregnancy of a woman appeared to be protracted to between twelve and thirteen months. There was every reason to believe that this woman had become pregnant during the absence of the menses, their suspension having taken place some time before intercourse; and this, no doubt, is the explanation of a large number of cases of alleged protracted gestation.

In the Gardner Peerage case, the Attorney-General was quite willing to rely upon the cessation of the menstrual discharge as a good criterion of the duration of pregnancy, when by such a mode of calculation this was not made to exceed forty weeks! But it is obvious that this condition must be either taken or rejected altogether as evidence: if taken, we have no right, in alleged protracted cases, to refer the suppression to disease, for the sake of shortening the period, when in ordinary cases we do not refer its continuance to disease, because this would tend to lengthen it: if rejected, it would be in the highest degree unjust not to give to a claimant the beneficial presumption of his having been born legitimate, when the cases adduced in evidence against his claim are actually based upon a precisely similar mode of calculation!

It is difficult to admit that all the protracted cases recorded by different observers have depended upon mistakes being made in the calculation of the period, since this calculation is based upon the same principles as those adopted in cases of ordinary pregnancy. Hence, if there is a mistake in the one case, there would be in the other: if an error in the exception, there would be an error in the rule. Either the average term of pregnancy is wrongly calculated by most accoucheurs at the thirty-eighth or fortieth week, or it is rightly calculated to extend occasionally to the forty-fourth or, admitting these protracted cases, to the *forty-sixth* week. But, even setting aside the obvious answer to an objection of this nature, some of the cases observed were instances of impregnation from a single intercourse; and, making due allowance for the interval for conception, the general inference would not be affected, and no fallacy could have arisen in such cases of protraction from mistakes dependent on the cessation of menstruation.

Some instructive papers on this subject have been published by the late Dr.

Reid. (See 'Lancet,' Sept. 3 and 10, 1853, pp. 205 and 235.) The conclusions at which Dr. Reid has arrived are decidedly adverse to the views of Dr. Murphy regarding the great duration of pregnancy. He states truly, that an accidental arrest of the menstrual discharge may take place for three, four, or many successive periods, while impregnation may have occurred at any time during this suspension. Under these circumstances, a calculation based on the date of the suspension of the discharge would, of course, be erroneous; and 'the number of days which elapse after the last menstrual appearance is not, therefore, *any proof* of the real extent of gestation in otherwise doubtful cases.' In one case which he reports, labour occurred 294 days after menstruation, but 278 days after intercourse; in a second, 287 days after menstruation, but 276 days after intercourse; in a third, 281 days after menstruation, but 277 days after intercourse; and in a fourth 294 days after menstruation, but 279 only from the earliest possible time of conception (intercourse). It will be perceived that while the dates from intercourse varied slightly, those from menstruation varied considerably. In a case reported by Dr. Montgomery, the last menstruation was on the 18th of October. Impregnation (intercourse?) took place on the 10th of November, and parturition followed on the 17th of August. The interval between insemination (intercourse) and parturition was thus 280 days, and between the last menstruation and parturition it was about three weeks more—namely, 303 days.

Dr. Reid's conclusions, derived from numerous facts and cases, represent the views of an experienced observer on this much-disputed question. They are—'1. The duration of pregnancy is not altogether a fixed period: it varies somewhat in the human female, as it does in the lower orders of animals. 2. This deviation, however, is not to any great extent: the only *certain* data of calculation are those dependent on the *known time of conception* (of *intercourse?*). 3. The *average* duration of the pregnant state, when calculated from this event, is about 275 days, or it may have a range of from 270 to 280 days. 4. There is no full or satisfactory evidence of gestation having been prolonged beyond 293 days. 5. The Code Napoléon, which allows 300 days, may be regarded as liberal. 6. The menstrual period must generally serve as our guide in default of some exact knowledge: it is, however, often fallacious, and is only a means of approximation to the probable time of parturition. 7. The fortieth week after the last appearance of the menses is the most likely period, and the forty-first week the next.'

Dr. Duncan ('Edin. Monthly Journal,' 1854, v. 9, p. 230) draws the following conclusions regarding the duration of pregnancy:—1. That the interval between conception and parturition (the real duration of pregnancy) has not been exactly ascertained in any case. 2. That the average interval between insemination (intercourse) and parturition (commonly called the duration of pregnancy) is from 275 to 278 days. 3. That the average intervals between the end of menstruation and parturition have no standard length, but vary within certain limits. 4. That while absolute proof of the prolongation of real pregnancy beyond its usual limits is still deficient, there is evidence to establish the probability that it may be protracted beyond such limits to the extent of three or even four weeks.

It will be perceived from the conclusions drawn by Dr. Reid, that he admits a variation of 23 days, *i.e.* from 270 days (the shortest period) to 293 days, the longest known to himself from a single intercourse. (See p. 242.) There appears to be no valid reason why the variation should not be even greater than that which is here assigned, and why the duration of pregnancy might not extend occasionally to 296 and even to 301 days. It is merely a question of individual experience. An accoucheur who admitted a variation of 23 days, *and* who had known gestation to be protracted to the 293rd day after inter-

course, would hesitate to pronounce a child illegitimate merely because it had been born on the 296th or the 300th day after the possible access of the husband. Dr. Duncan, who has written much on this subject, places his average from one set of cases at 275 days, and from another set at 278 days; but he allows that gestation may be extended four weeks beyond these limits. Taking the shortest period and adding to it 28 days, this would make a possible extension of gestation to 303 days, or forty-three weeks and two days. There is no doubt a limit to gestation, but it is not in our power to fix it; hence we find obstetric writers of repute adopting periods which have no point of agreement among themselves. Some stop short at 280 days; others, like Dr. Reid, fix the maximum yet known at 293 days; Dr. Murphy allows from his experience at least 324 days; and Dr. Meigs considers that gestation may be continued to twelve months, or 365 days. ('Obstetrics, the Science and the Art,' 1849, p. 194.) The fact is, the term has not yet been fixed even approximately by medical science: hence, in a disputed case, other circumstances must be looked to in order to lead a Court of Law to a safe decision. It is at present hopeless to reconcile the conflicting medical opinions which exist on the subject of the duration of pregnancy in the human female. There is, indeed, only one point on which all modern observers agree, namely, that the period cannot be limited to a certain number of days, but that it is liable to variation according to circumstances but little understood.

It has already been observed (*ante*, p. 244) that the date of intercourse does not furnish us with the date of conception, and according to some authorities all evidence connected with the function of menstruation is untrustworthy. In spite of these objections, the menstrual period must generally serve as a guide in default of more certain criteria. It is, however, a curious fact, and one which the mind of an acute lawyer will not fail to appreciate, that the date of the cessation of the menses is taken by some physicians as a guide (in married life with constant intercourse), so long as gestation does not extend beyond 280 days; while, supposing it to extend to 300 days, they will assume that some other cause than pregnancy must have led to an earlier suppression, and thus to an error in the calculation! There may be no more evidence of suppression from a morbid cause in the one case than in the other, and the period of 280 days may therefore be as much based on error as the period of 300 days. It is strange that clever writers, who adopt this mode of making facts square with a foregone conclusion, do not perceive that they must, in fairness, either reject altogether the evidence derived from the cessation of the menses, or admit it adversely to their own views, in cases in which the facts connected with the cessation have been as carefully observed and recorded by others as by themselves.

Period of gestation not fixed by law.—In all cases of contested legitimacy, the question respecting the duration of gestation, when it arises, is left entirely open by the English law. The French law, under the 'Code Napoléon,' allows 300 days, and the Prussian law 301 days; but no period has been fixed by English jurists within which, or beyond which, a child, if born in wedlock, will be presumed to be illegitimate. The decision of a Court of Law would be founded, *quoad* the duration of pregnancy, on the opinions of experts selected for the occasion, and each case would be decided on its own merits. Precedents can have but little influence on these occasions, because a Court may think fit to pronounce illegitimate, on non-medical grounds, a child born in the thirty-eighth week of gestation, while it may decide that another was legitimate that had been born in the forty-third week. By some law authorities *forty* weeks (or 280 days), and by others forty-three weeks (or 301 days), have been taken as the *ultimum tempus pariendi*; but as the period of human gestation is wholly independent of any legal dictum, it is not the custom of

Courts to act upon this as as a rule. Nevertheless, it is clear in some extreme cases that the law may fairly interpose, and pronounce for a reasonable limit. In the case of *Cotterall* v. *Cotterall* (decided in the Consistory Court, July 1847), a child was born during the marriage, and the husband proceeded against the wife for a divorce on the ground of adultery. The main proof was based on the fact, that in order to have been the child of the husband, it must have been born after *twelve months'* gestation. The husband left his wife in New South Wales, and was absent for that period of time without possibility of access. Dr. Lushington, without entering into the question of protracted gestation, upon proof of this allegation, at once pronounced for the divorce. Such a duration of pregnancy is not supported by any known facts, and is altogether opposed to medical probability. In an affiliation case before Mr. Selfe, at the Thames Police Court (Oct. 1857), proof was afforded that the putative father had been absent from England eleven months and six days before the child was born, and on this evidence the case was at once dismissed. In March 1859, a case was referred for my opinion from Scotland, in which it appeared that husband and wife had parted on the 23rd January, 1858, the husband having gone to the West Indies. A child was born on the 29th December following, *i.e.* 339 days (or forty-eight weeks and three days) from the time at which the husband parted from the wife. The child died, and a claim was made on a life-insurance society for a sum of money alleged to be due to the parents on account of this child. The society refused payment, on the ground that the child was illegitimate. My opinion was adverse to the claim: the length of the alleged gestation, and the state of the child when born, were sufficient to prove that it was not the child of the husband.

In *Anderton* v. *Gibbs* (1834), the Vice-Chancellor decided that a child born ten months (or about *forty-two weeks*) after intercourse with the husband was legitimate. A verdict had been already returned establishing the legitimacy of the plaintiff; and an attempt was now made to set this aside, among other grounds, upon the plea that the offspring was illegitimate, because it had been born at so long a period after possible access. It appeared that the mother of the plaintiff, for some time before and at the period of the birth, had been living in adulterous intercourse; and that about *ten months* before the birth of this child she had had a private interview with her husband, when it was assumed that there had been access, but the parties did not meet afterwards. Before the adultery, they had lived together two years without having had issue; and in the present instance the child was born after a period of *forty-two weeks*—facts which were considered to establish its illegitimacy. The opinions of Sir Charles Clarke and other medical men were adduced at the trial, and these limited the extreme period of gestation to forty weeks; but they at the same time declared that the subject was involved in great uncertainty. The Vice-Chancellor considered that the jury at the trial had given a proper verdict by finding for the plaintiff's legitimacy. The jury were not to decide by whom the child had been *begotten*, but whether it could *by any possibility* be the child of the husband. With respect to the period of gestation, there was no difficulty. Sir Charles Clarke, and other authorities, confessed that the subject was involved in darkness and mystery, and that the Faculty of Medicine knew nothing certain about it. There was no positive evidence as to the exact day on which the child was born, nor on which the interview between the husband and wife took place: therefore this would allow of the period of gestation being reduced to about forty-two weeks, or less. The legitimacy of the plaintiff was in his opinion legally established. From this case it will be seen that a child may be affiliated on the husband, although the wife may be living at the same time in adulterous intercourse with another *person.*

Few trials in relation to legitimacy have excited more attention among jurists than the *Gardner Peerage* case, which came before the House of Lords in 1825. A full account of the medical evidence has been published by Dr. Lyall. ('Med. Evid. in Gardner Peerage case,' 1827.) Alan Legge Gardner, the son of Lord Gardner by his second wife, petitioned to have his name inscribed as a peer on the Parliament Roll. The peerage was, however, claimed by another person, Henry Fenton Jadis *alias* Gardner, who alleged that he was the son of Lord Gardner by his first and subsequently divorced wife. It was contended that the latter was illegitimate; and in order to establish this point, the evidence adduced was partly medical and partly moral. Lady Gardner, the mother of the alleged illegitimate child, parted from her husband, on board of his ship, on the 30th of January 1802. Lord Gardner went to the West Indies, and did not again see his wife until the 11th of July following. The child whose legitimacy was disputed, was born on the 8th of December of that year. Therefore the plain medical question, taking the extreme view, was whether a child born 311 days (*forty-four weeks and three days*, from January to December), or 150 days (*twenty-one weeks and three days*,—from July to December) after possible intercourse, could be the child of the husband, Lord Gardner. If these questions were answered in the affirmative, then it followed that this must have been either a premature or a protracted birth. There was no pretence that it was a premature case, the child having been *mature* when born. The question then was reduced to this—Was this alleged protracted gestation of 311 days consistent with medical experience? Many medical witnesses, comprising the principal obstetric practitioners in the kingdom, were examined on this point. Their evidence was conflicting, but a majority concurred in the opinion that natural gestation might be protracted to a period which would certainly cover the birth of the alleged illegitimate child. On the moral side of the question, it was clearly proved that Lady Gardner, after the departure of her husband, was living in open adulterous intercourse with a Mr. Jadis; and on this ground Lord Gardner obtained a divorce from her after his return. He subsequently married a second wife, by whom he had the claimant, Alan Legge Gardner. It was contended that the other claimant was really the son of Lady Gardner by Mr. Jadis. The decision of the House was that this claimant was illegitimate, and that the title should descend to the son of the second Lady Gardner.

The decision appears to have been chiefly based on moral circumstances: for had not the first Lady Gardner been living in adultery at the time of her husband's departure, it is highly probable, from the medical evidence bearing strongly that way, that the legitimacy of the child would have been admitted. Again, supposing the child had been born two or three weeks earlier, the question would have resolved itself into this: Who had begotten the child—the husband or the adulterer? This could not have been decided, and then, probably, as in the more recent case of *Anderton* v. *Gibbs* (suprà), the rule of law would have pronounced the husband to have been the father. The Judges must have considered that medical opinions, without cases to support them, could not be safely received. It is obvious that the possibility of gestation being protracted must stop somewhere, and it was probably thought that this point had here been passed. Morally speaking, the decision could not be impugned, but medically speaking it assumed that gestation could never be protracted to the 311th day after probable intercourse. Considering that conception is not necessarily the immediate result of intercourse (p. 244), and that we have no data for fixing the precise time of its occurrence, this decision could hardly be supported on medical grounds. We should not be justified in affirming that every child born forty-four weeks and three days after the opportunity of intercourse with the husband was *ex necessitate rei* an illegitimate child, and

that the wife was an adulteress. It is true that their Lordships did not decide directly that the one claimant was illegitimate, because he could have been born only after 311 days' gestation; but their decision practically led to this result, as the other claimant was pronounced to be the only son and rightful heir of Lord Gardner. Of the seventeen medical experts examined on this occasion, five supported the opinion that the duration of human pregnancy was *limited* to *about* nine calendar months, *i.e.* from thirty-nine to forty weeks, or from 273 to 280 days—or, strictly speaking, from 270 to 280 days; one of the witnesses, indeed, said from 265 to 280 days. These witnesses, of course, gave a negative to the possibility, unless by miracle, that Henry Fenton Jadis *alias* Gardiner could have been the product of 311 days' gestation. On the other side, of twelve medical gentlemen who seemed to agree with respect to the above-mentioned period as the natural term of gestation, the greater number maintained the *possibility* of pregnancy being protracted to nine-and-a-half, ten, or even eleven calendar months, and of course to 311 days—the alleged term of gestation, at which the counter-claimant was born—and they thus admitted the possibility that Mr. H. F. Jadis *alias* Gardner might be a ten-and-a-half months' child. (Lyall's 'Med. Evid. on the duration of Pregnancy,' &c., p. 8.)

In the following case (*Luscombe* v. *Prettyjohn*, Exeter Summer Assizes, 1840) a period of less than 300 days—the time allowed by the laws of France and Prussia—was represented as falling beyond a time at which a child could be legitimately born. There was no medical evidence, and the jury declined to take the dictum of the learned judge on this question:—An action was brought against the defendant, by a farmer, to recover compensation for the loss of his daughter's services. It was alleged that the defendant had seduced her, and that she was delivered of a child, of which he was the father. He denied that the child was his, among other reasons, on the ground that it was born 299 days (or forty-two weeks and five days) after intercourse. No medical evidence was called to show that gestation might be thus far protracted; but the learned judge, in summing up, is reported to have made the following observations:—'Upon the evidence it was almost *impossible* that he (the defendant) was the father. Supposing that she (the woman) were right, that would place the birth at nine calendar months, three weeks, and five days.' [The last meeting between the parties was had on the 9th of February, and the child was born on the 5th of December 1838, which is equal to an interval of 299 days.] After adverting to some medical authorities relative to gestation, he said:—'He would rather believe that she had yielded to some other attempt on her chastity, than that so wide a departure from the usual course of nature had taken place!' The jury did not concur in this view, and they returned a verdict for the plaintiff, thereby pronouncing an opinion, which is certainly borne out by medical experience, that the defendant might have been the father of the child, although *forty-two weeks and five days* had elapsed since the last access. ('Lancet,' Aug. 1840.) Had the verdict been the other way, there would have been fair ground, medically speaking, for a new trial; for the summing-up was undoubtedly made on an entirely mistaken view of medical doctrines. It amounted to this—that the chastity of every married woman who bears a child in the forty-third week of pregnancy after the absence or death of her husband is to be impeached, and the legitimacy of a child is to be set aside on bare proof of this fact!

In a well-marked instance of gestation from a single intercourse, noticed by Dr. Reid, the interval was 293 days—only six days earlier than the period here pronounced to be incompatible with legitimacy; and by referring to the cases of Drs. Rigby and Merriman, it will be seen that the periods of gestation from a single intercourse have varied to a much greater degree than the

two here placed in comparison (p. 242). This shows the risk to which the decision of such questions is exposed, when medical evidence is not called for on matters so strictly professional. The following case, which was tried in the United States (in January term, 1844), furnishes a contrast to that just quoted (*The Commonwealth* v. *Porter*, Cambria county, Pa.). The facts were somewhat similar:—The defendant was indicted for fornication and bastardy. The prosecutrix, aged 23, stated that she had had intercourse with the defendant on the 24th September 1842, and with no other person before or subsequently. She was delivered of a child on the 7th August 1843, *i.e.* after 317 days, or *forty-five weeks and two days' gestation*: she swore that the defendant was the father of the child. The menses ceased about three weeks after intercourse, and they only appeared again slightly about five weeks before the child was born. At this time she had pains, which continued more or less until her delivery; she first knew that she was pregnant three or four weeks after intercourse. The defence was that, from the period of time which had elapsed, the defendant could not have been the father of the child. He therefore merely proved his absence, and that he did not return until after the birth of the child. No evidence was adduced to impeach the character or conduct of the woman. It was proved that she had always borne a good reputation, and that she had been seduced by the defendant under a promise of marriage. Dr. Rodrigue deposed that, in a practice of nineteen years, he had attended some hundreds of cases of midwifery, and the longest period of gestation which he had known was *ten months*. He considered the pains described by prosecutrix to have been the commencing pains of labour. The Court charged the jury strongly in favour of the medical testimony on protracted gestation, and they returned a verdict of guilty, thereby finding that the defendant was the father of the child. It transpired that a wife of one of the jurymen had during one pregnancy gone ten months. ('Amer. Jour. Med. Sci.,' Oct. 1845, p. 338.) Dr. Rodrigue, who reports this trial, states that a case subsequently came to his knowledge in which there was reason to believe that gestation had continued for a period of 320 days.

It would appear that the question of protracted gestation is frequently raised in the United States under these circumstances. Another case of bastardy (*The Commonwealth* v. *Hooner*) was tried in May 1846, in which the alleged duration of pregnancy must have been 313 days, or forty-four weeks and five days. The prosecutrix deposed that she had had intercourse with the defendant on the 23rd March 1845, and not subsequently—a fact established by the evidence; and the child, a large healthy male, was proved to have been born on the 30th January 1846. Twelve obstetric physicians were examined on this trial, and, as usual, they differed from each other. Some regarded it as possible, but not probable, that gestation might be so protracted as to reach 313 days; various medical works were quoted on the subject. The Court charged the jury that, although unusual and improbable, this length of gestation was not impossible; and they returned a verdict finding that the defendant was the father of the child. ('Dub. Med. Press,' 4th Nov. 1846, p. 296.) In the case of *Dyson* v. *Dyson* (Vice-Chancellor's Court, Feb. 18, 1852), it was proved that the husband left his wife in Madeira in Feb. 1849, that she returned to England in the August following, and that the child whose legitimacy was contested was born on the 8th Jan. 1850. It was contended that this was a case of protracted gestation; and the evidence of several medical men, to the effect that gestation might be protracted to 330 or even 336 days, was quoted in support of this view; in this instance there was a period of 336 days. The Vice-Chancellor, having referred to the Gardner Peerage case, declined to make a decree in favour of the legitimacy of the plaintiff. ('Legal Examiner,' Feb. 21, 1852.)

In a recent case (*Renouf* v. *Eden*, Q.B., February 1870), an action was brought by a milliner against defendant for seduction. The plaintiff and defendant met in the island of Guernsey, and it was admitted than an intimacy had existed between them. The defendant left the island on the 15th April, 1867, and did not return to it. Plaintiff was delivered of a child on the 15th February 1868, *i.e.* 307 days, or forty-four weeks minus one day, after the departure of the defendant. There was no evidence that plaintiff, either before or subsequently, had had connection with any other person. On the part of defendant, it was contended that he could not possibly have been the father of the child, seeing that, if so, there must have been a period of gestation of over 300 days, which it was contended was physically impossible. Upon this point two physicians were called on each side. Dr. Tanner and Dr. Clark, for the plaintiff, declared that though 275 days was the usual period of gestation, they had known cases of 297 or 300 days; and there were in medical books cases of still longer periods. On the other hand, Dr. Tyler Smith and Dr. Barnes were called, and stated that in their belief the current of medical opinion ran now strongly in an opposite direction, and went to narrow rather than extend the limits of possible gestation; and though they would not go so far as to say that it was absolutely impossible that the period should extend to 300 days, they believed it so improbable as to be practically incredible. On the part of the plaintiff, a case lately decided was quoted to show that, even although the child was not the defendant's, yet if he had incited the girl to leave her mother's roof, and then seduced her, the mother was entitled to recover. The Lord Chief Justice agreed in this, and directed the jury that the main issue did not turn upon the medical evidence, for that only went to probabilities, but on all the probabilities of the case. A verdict was returned for the plaintiff, with damages. The medical witnesses on both sides agreed that gestation might be protracted to the extent which would have made the defendant the father of this child, those for the defence only contending that it was improbable. As to the 'current of medical opinion,' this can hardly be taken as a safe basis for evidence. On these doubtful questions it is as often right as wrong. The real question is what are the facts, and on what amount of experience is the medical opinion based.

In extra-uterine pregnancy the fœtus may be carried for many years. Dr. Craddock relates a case, in which gestation was thus protracted for the very long period of twenty-two years. ('Phil. Med. Exam.' May 1846, p. 286.)

It will be seen, by the foregoing cases and remarks, that in these suits of contested legitimacy, the general practice consists in establishing possibility of access on the part of the husband; when this is proved, the medical question arises, whether the term of gestation falls within the limits assigned by the best medical experience. In two instances, children have been pronounced legitimate, which were born, the one in forty-one weeks and three days, and the other in forty-one weeks and four days, after the death of the husband. Legitimacy has been allowed where gestation was probably protracted to the *forty-third week* (*Anderton* v. *Gibbs*, 1854). In the United States, a decision in favour of paternity has been made in a case in which gestation extended to *forty-five weeks* and two days (*Commonwealth* v. *Porter*, p. 269). Legitimacy has been disallowed in the English Courts, although probably on non-medical grounds, where it was protracted to *forty-four weeks* and three days (*Gardner Peerage case*, 1825); in one case paternity was denied (judicially) because gestation had extended to *forty-two weeks* and five days (*Luscombe* v. *Prettyjohn*, suprà), and in another (*Dyson*, suprà) because it had extended to *forty-eight weeks*.

Cases in reference to proof of access.—In the case of *Cope* v. *Cope* (North

Spring Circ. 1833) an action was brought by the plaintiff for his share of a legacy, to a part of which he declared himself entitled, as being the son of the deceased testator's brother. There was no doubt that the plaintiff was born during lawful wedlock; but it was contended that he was an illegitimate child—therefore it remained with the defendants to establish his illegitimacy by evidence. The defendants rested their case, first, on the entry in the parish register, which represented the plaintiff to be an illegitimate child; secondly, on *non-access* between the husband and wife. The husband, having separated from the wife, went to reside at about fourteen miles' distance from her. He was absent for several years; but it was contended that he was always within a short distance of the wife. During his absence the wife formed an illicit connection with another man, and at this time the plaintiff was born; but it was rendered probable that the husband had visited the wife before and after the birth of the child. It appears that both the woman and her husband regarded this child as illegitimate; and an attempt was made, on the part of the defendants' counsel, to put in declarations to that effect. But the Court interposed; and Alderson, B., said—'Lord Hardwicke had decided that the mother could not be allowed to give evidence on such a point, as she could not discharge the husband of the birth of the child; and *à fortiori* the husband could not be permitted to discharge himself. Lord Mansfield and Lord Hardwicke had both decided that illegitimacy could be proved only by the fact of there being no marriage, or by proof of non-access: and it was held, on the grounds of decency and morality, that the parties themselves should not be allowed to prove non-access after their marriage.' In summing up, he further observed that—'If a child be born in marriage during the lifetime of the husband, that child in law is presumed to be legitimate. The plaintiff in this case is the youngest child, and was born after four other children, and during the lifetime of the reputed father; and he is in law, therefore, legitimate, unless the fact were proved, which it was for the jury to decide upon, viz. that the husband had not had opportunities of access. If a husband have access, and others at the same time have criminal intimacy with his wife, still a child born in such a case is legitimate in the eye of the law. But if the parties are living separate, and the wife is notoriously living in open adultery, and the husband have opportunities of access, yet under such circumstances it would be monstrous to suppose that he would avail himself of these,—then the legitimacy of a child, so born, could not be established.' The jury returned a verdict for the plaintiff, finding that he was legitimate.

From this case we learn what kind of evidence the law requires in order to establish access or non-access. In order to defeat the legal presumption of access, where husband and wife are living near to each other, something more than mere probability of non-intercourse must be adduced. It is true that in this case the wife, while separated from her husband, was living in open adultery, but non-access of the husband was far from being clearly established. On the contrary, access was rendered *probable* by evidence: therefore a verdict was returned, finding the plaintiff legitimate. It will be seen that very little value is set on baptismal registries as evidence of legitimacy, or the contrary; also that the declaration of a parent is not likely to be received by a Court as evidence of the illegitimacy of the reputed offspring.

The case of *Morris* v. *Davis*, which came before the Lord Chancellor in 1830, was a suit of contested legitimacy, which had been pending for eighteen years; and which was finally left by both parties to be disposed of by the judgment of his Lordship, on the facts and on the law of the case. The plaintiff was the son of a Mrs. Morris, and claimed to be the son of the husband; but it was contended that, although born in wedlock, he was illegitimate. The husband and wife had voluntarily separated, but lived for many years within

a short distance of each other. The wife was living in adultery; and fourteen years after the separation from her husband this child, the plaintiff, was born. The wife saw her husband occasionally, but concealed the birth of the child from him. The man with whom she was cohabiting always treated the child as his own; and Mr. Morris remained for seventeen years in ignorance of its birth, or even of its existence. His Lordship having stated the law of the case, as already given, said the question was one of fact, and not of law. There was an apparent difficulty in the case, owing to this—that the parties, although separated, were proved to have met occasionally; there was therefore, unquestionably, opportunity of access—but it so happened that *none of these meetings would correspond with the time requisite for the birth of the child* to render it legitimate. This fact, together with the general bad conduct of the mother, and her open adulterous intercourse, led him to pronounce that the plaintiff was an illegitimate child—that he was not the son of Mr. Morris. This judgment was not opposed to the rule of law, nor was it founded upon a mere balance of probabilities, but entirely upon the facts of the case. In the case of *Gurney* v. *Gurney* (Vice-Chancellor's Court, May 1863) a similar question arose, but the evidence clearly established that there had been no access in the interval between December 1859 and the date of the child's birth, in May 1861. In the case of *Plowes* v. *Bossey* (February 1862), the Vice-Chancellor decided in favour of the legitimacy of a child, although the husband was confined in a lunatic asylum—on the ground that the wife visited the lunatic, and intercourse might have taken place, in spite of the watchfulness of the keepers.

In a more recent case (*Atchley* v. *Sprigg*, January 1864), Vice-Chancellor Kindersley said that a child born of a married woman is presumed *primâ facie* to be legitimate—that is, to have been procreated by the husband—and our law respected and supported the legitimacy of such child; and although it did not prohibit any person interested from making out the illegitimacy, it threw the *onus probandi* entirely upon him. If the case made by such person was that the husband and wife never were together within the period during which, according to the law of nature, they must have been to make the child the child of both, or that they were together either in company or under circumstances making the fact impossible, the onus was on him to prove, and not on the other side. Moreover, where evidence was brought forward to prove illegitimacy, the Court did not treat the matter on the balance of probability, and the evidence must be such as to produce a judicial conviction that the child was not procreated by the husband. The question the judge had to ask himself, therefore, was whether, having considered the whole evidence, his mind was left in such a state as to convince him that the husband was *not* the father of the child. He was convinced, upon the whole, not that there was an impossibility that the husband ever could have had sexual intercourse with his wife (for that the law did not now require), but that such intercourse never did take place either during the period when the child must have been begotten, or at any other time from the year 1824, when they separated, until his death. Upon the whole, therefore, the case of the claimant must fail, the evidence of illegitimacy being such as to exclude all doubt.

PATERNITY.

CHAPTER 69.

DISPUTED PATERNITY—EVIDENCE FROM LIKENESS—DOUGLAS PEERAGE CASE—PARENTAL LIKENESS—AFFILIATION—POSTHUMOUS CHILDREN.

Disputed paternity. Parental likeness.—It has been stated that the law does not pretend to determine who begat a child when it has been born during wedlock, and from circumstances it might be the child either of the husband or of an adulterer. But medical jurists have recommended that family likeness should be looked to on these occasions,—not merely a likeness in *feature* and figure, but in gesture and other personal peculiarities which may have characterized the alleged parent. These are called questions of *paternity:* they seldom occur except in reference to cases of bastardy, and when they do present themselves, the evidence thus procured, even if affirmative, is properly regarded as only corroborative. In the *Townshend Peerage* case (House of Lords, May, 1843), a presumption based on family-likeness was admitted by their Lordships. The person whose legitimacy was in question, was sworn by one of the witnesses to bear so strong a likeness as a child to the alleged adulterer, that he should have known him among five hundred children. Witnesses to identity may be divided into two classes—those who speak to resemblances between persons, and those who speak to differences. The latter are generally more worthy of confidence.

The proceedings in the *Douglas Peerage* case (1767–9) show that evidence of this kind is occasionally of some importance. The peerage was claimed by Archibald Douglas—the survivor of two brothers after the death of the alleged parents, Sir John and Lady Douglas. The claim was disputed, on the ground that the appellant and his deceased brother were supposititious children. Evidence for and against the legitimacy of the claimant had been collected from every quarter, and after it had been most minutely sifted and criticized, the case came on for judgment, in the Court of Session in Scotland, on the 7th of July, 1767. So important was the cause deemed, that the fifteen judges took eight days to deliver their opinions. The result was that seven of the judges voted in favour of the identity or legitimacy of Mr. Stewart, and seven against it: the Lord President, who had the casting-vote, agreed with the latter, by which Archibald Douglas, *alias* Stewart, was cast on the world without either name or estate—thus furnishing one among numerous instances that learned judges as well as doctors can differ with precisely the same facts before them. An appeal from this decision was taken to the House of Lords, by which the judgment of the Court of Session was reversed in 1769, and Archibald Stewart (or Douglas) declared to be the undoubted son of Lady Jane, the sister of the previous holder of the title. Much stress was laid, in favour of the legitimacy of these children, on the fact that they closely resembled—the one Sir John, and the other Lady Douglas. The resemblance was said to be general; it was evident in their features, gestures, and habits. Lord Mansfield, in delivering judgment, made the following remarks, which comprise all that can be said on this subject:—'I have always considered likeness as an argument of a child being the son of a parent, and the rather as the distinction between individuals in the human species is more discernible than between other animals. A man may survey ten thousand people before he sees two faces exactly alike; and in an army of a hundred thousand men, every man

may be known from another. If there should be a likeness of feature, there may be a difference in the voice, gesture, or other characters, whereas a family-likeness runs generally through all of these: for in everything there is a resemblance, as of feature, voice, attitude, and action.' This kind of evidence has been strongly objected to from its uncertainty; and I am informed, on good authority, that it was in this instance much disputed whether one of the children did resemble Lady Douglas, but it seems to have been generally admitted that the other child resembled the husband, Sir John. From this account it will be seen that evidence from family-likeness is not strictly medico-legal; it can be furnished only by friends and relatives who have known the parties well, and are competent to speak of the facts from personal acquaintance with them. It will also be apparent that the affirmative evidence in such cases will be stronger than that which is negative, for it could hardly be inferred that a person was illegitimate because he did not resemble his parent.

Parental likeness may be occasionally indicated by colour or peculiarities belonging to the varieties of mankind, as of the intermixture of the Negro or Mongolian with one of the Caucasian variety. In such a case the evidence afforded becomes much stronger; and supposing that two men of different varieties have intercourse about the same time with the same woman, the colour of the skin of the offspring might enable a Court to determine the question of paternity. It is stated to have happened, on more than one occasion, that a black woman has given birth at the same time to a black child and a mulatto; and Dr. Cunningham refers to a case in which a negress gave birth to twins, one a black and the other a white child. ('Lancet,' May 9, 1846, p. 525.) This was probably a case of superconception. In *Stothard* v. *Aldridge* (Bail Court, January 1856), the plaintiff sued the defendant for damages for the seduction of his wife. The defendant was a man of colour, and the child born of the alleged adulterous intercourse was proved by the medical witness to have been born coloured and with woolly hair. The husband and wife were both light. This peculiarity fixed the paternity of the child on the black defendant.

Personal *deformities* are not necessarily transmitted from parent to child; yet it would appear from the subjoined case, that a disputed question of affiliation has been settled on this principle. A woman alleged that a gentleman in whose service she had lived, was the father of a child of which she had been recently delivered. The solicitor who appeared to support the affiliation, rested his case chiefly on the fact that the child had been born with five fingers and a thumb on the right hand, the defendant himself having been born with a similar malformation on both of his hands. It was argued, on the other side, that the deformity might have arisen from the mother's imagination, as, while pregnant, she was constantly in the habit of seeing the defendant. The magistrates decided that he was the father of the child, and condemned him to pay the necessary expenses for its support. ('Med. Times,' March 6, 1847, p. 47.) It is very likely that the decision was here influenced by moral circumstances, for otherwise the defendant might have been the victim of a coincidence. Six-fingered children are, it is well known, born occasionally of five-fingered parents: and as the deformity existed only on one hand in the child, while it was on both hands in the parent, the medical proof that it was actually transmitted by generation was certainly not clearly made out. In some instances attempts have been made to fix the paternity of a child by the *colour of the hair*, but this evidence is far less conclusive than that afforded by the colour of the skin. In the case of *Frazer* v. *Bagley* (Feb. 1844) it was alleged that the wife of the plaintiff had had criminal intercourse with the defendant, and the last two children were stated to be the offspring of the

latter. The plaintiff and his wife had dark hair, as well as all the children with the exception of the two last:—these had red hair; and it was further proved that the defendant had red whiskers and sandy hair. No particular stress was laid upon this evidence, but it was received as a kind of indirect proof. Not much confidence can be placed in facts of this description, since red-haired children are often born to parents who have dark hair; and in one case the children born in wedlock were observed to have dark and red hair alternately.

Affiliation.—Questions of paternity are involved in those relating to *affiliation.* A party may allege that he is not the father of a particular child, by reason of certain circumstances upon which a medical opinion may be required. The necessary transmission of gonorrhœa or syphilis by intercourse may thus become a medical question. In September 1844 a man was required, under the law of bastardy, to support two children alleged by a female to be his; the time of gestation was within nine months. The accused denied that he had had intercourse with the woman, or that he could have been the father, since he was at the time under medical treatment for venereal disease. The medical questions may therefore assume this shape:—1. Are these diseases invariably transmitted by intercourse? 2. Do they interfere with the act of procreation? Under common circumstances they must both be answered in the negative.

A singular case of bastardy is reported to have occurred in Appenzell, Switzerland. The question was, which of two persons, who had had intercourse with the same woman within a period of *seventeen days*, was the father of an illegitimate child borne by the woman? The Council, to which the case was referred, gravely resolved to postpone their decision until the features of the child were so far developed as to enable them to decide from *paternal likeness.* The equity of this difficult case would have been met by compelling each man to contribute to the support of the child! (Schneider's 'Annalen der Staatsarzneikunde,' 1836, B. 1, s. 470.) The following, which is a more doubtful case, was the subject of a communication to the 'Lancet' (March 13, 1847, 336);—Two men, A and B, had intercourse, unknown to each other, with a young woman of delicate health; and after this had continued for some years, she was delivered of a female child—nine calendar months and three days after sexual intercourse with A, and nine calendar months, less five days, after similar intercourse with B; or at the end of 279 days after intercourse with A, and at the end of 271 days after intercourse with B:—that is, a period of *eight days* elapsed between the periods of intercourse of the two men. The woman had no menstrual discharge in the meantime, and it is not believed that she knew any other man; she went her full time, had a good labour, and produced a fine healthy girl; she had a plentiful supply of milk, and enjoyed better health during her pregnancy and suckling than at any other time. The woman died, and the circumstances of the mixed intercourse having become known to A and B, they both refused to maintain the child. A contended that, as the woman was not delivered until nine months and three days after the connection with him, it was physically impossible the child could be his. B contended, on the other hand, that 280 days, and not nine months, is the period of gestation; and that the child having been born 279 days after connection with A, and only 271 days after connection with B, it was therefore probable that the child was begotten by A. There was no perceptible likeness to either of the men in the child, but a marked likeness to the mother It is obvious, from the remarks elsewhere made (*ante*, p. 244), that the periods of 271 and 279 days are comprised within the ordinary range of gestation: hence there would be no *medical* ground for affiliating the child to one man more than the other. Dr. Wachs

has reported a case in which the question was, whether a child could have been begotten on the day of the marriage or on an intercourse had with the woman sixteen days before. (Horn's 'Vierteljahrsschrift,' 1870, B. 2, s. 66.) The length and weight and other characters of the child showed that it was mature, and had reached its full development, but this would not suffice to justify a medical opinion on the precise date of conception. Such a question does not admit of any definite answer in reference to paternity, the dates of intercourse being too close together.

When two men have intercourse with the same woman on the same day, it is impossible to settle the paternity except by the accident of likeness; as in the former case, justice to the offspring and to each possible father requires that each should be bound to support the child. In cases of affiliation under the law of bastardy, the evidence of the mother, if corroborated, is received in support of a question of disputed paternity; sometimes these cases are decided by the length of the period of gestation. A man may prove, or a woman may state, that the intercourse took place at such a remote period as to be inconsistent with the ordinary duration of pregnancy. On this point some remarks have been made elsewhere (*ante*, p. 269). In the United States it appears that very long dates are allowed in bastardy cases; while in this country the tendency is to reject medical evidence altogether. In a case at Cheltenham (July 1853) the date of intercourse was proved to have been 319 days before the birth of the child. The medical evidence on the whole was in favour of this protraction—one of the witnesses having met with two cases in which gestation was protracted, as he believed, to 310 days from intercourse—but the case was summarily dismissed.

These questions of affiliation, when the interval is less than six or eight weeks, can rarely be determined by medical evidence; in a twin-case, it would be only just that one child should be affiliated to each individual. In a recent case of affiliation, an attempt was made to set aside the order of a magistrate fixing the paternity on the putative father, on the ground that, as the intercourse was had and the child conceived in France, although born in England, it was removed from the jurisdiction of an English magistrate, and should be left to the French Courts. The objection was overruled, and the alleged father was ordered to pay the usual sum for maintenance. The place of birth should properly fix the liability, as any other rule would be too vague. From what has been elsewhere stated (*ante*, p. 241), the reader will perceive that in a given case, intercourse might take place in Scotland followed by conception in England and birth in Ireland. So that there is a due relation between the date of intercourse and the date of birth no other proof is necessary or should be required.

Posthumous children.—It has been supposed that a case involving a question of paternity might present itself on the marriage of a widow soon after the death of her first husband. If a child were born after the lapse of ten months, it might be a question whether it was a child of the first or second marriage—of the dead or the living husband; and although there might be no dispute concerning its legitimacy, yet it would be difficult to settle its *paternity*. Such a case appears hypothetical. In order that any doubt should exist, a woman must marry within, at the furthest, *six weeks* after the death of her first husband, or the birth of the child would fall beyond the furthest limit of gestation, so far as he was concerned. The customs of society are, however, a bar to such marriages; and admitting that a child was so born, and that it might be the offspring of either husband, then the fact of its having been born during the marriage of the second husband would presumptively fix the offspring upon him, unless it could be shown that there was no possibility of access on his part. If there was a supposed greater likeness to the first than the second

husband, still this would not be allowed to defeat the legal presumption of the real parentage of the child. It appears to me that evidence much stronger than this would be required for such a purpose. (See Henke's 'Zeitschrift,' 1838, vol. 2, p. 432.)

HERMAPHRODITISM.

CHAPTER 70.

SEXUAL MALFORMATION—HERMAPHRODITISM—ANDROGYNUS—ANDROGYNA—DISTINCTION OF SEX—MISTAKES IN THE SEX OF CHILDREN—CAUSES OF SEXUAL DEFORMITY IN THE FŒTUS—LEGAL RELATIONS—CASES IN WHICH THE DETERMINATION OF SEX IS NECESSARY—IMPUTATION OF HERMAPHRODITISM—REMOVAL OF SEXUAL PECULIARITIES BY OPERATION—THE RIGHTS OF ELECTORS DEPENDENT ON A NORMAL CONDITION OF THE SEXUAL ORGANS—CASES OF CONCEALED SEX—CASE OF DR. BARRY.

General remarks.—The legitimacy of a child is open to be contested under other circumstances than those connected with the duration of gestation. The alleged parent may have laboured under *physical incapacity*: if a male, he may have been affected with impotency: if a female, she may have laboured under sterility; and if either of these conditions be proved, the illegitimacy of a child will be established, although the alleged period of gestation may be comprised within the ordinary limits. The sexual conditions now about to be considered have also important bearings in relation to divorce, and occasionally to the civil rights of a child that may be the subject of the malformation. One of the most common and obvious causes of impotency or sterility is malformation of the sexual organs, to which species of monstrosity the term *Hermaphroditism* is commonly but erroneously applied.

SEXUAL MALFORMATION.

Owing to arrested or imperfect development, during the growth of the fœtus, the sexual organs, which can scarcely be distinguished at the fourth month, occasionally assume an abnormal arrangement. These organs appear to be at that time more or less mixed; and as the fœtus grows, sometimes the male, and at others the female characters predominate. With this defective sexual development, the other peculiarities of the sexes are either wanting, or we find them more or less blended. When, therefore, the being has the general characters of a male with malformation of the generative organs, it is called *androgynus*; when the characters are those of a female with a like malformation, *androgyna*. There can be no difficulty in identifying such cases, and, according to the degree of malformation, a medical jurist can have no hesitation in pronouncing these persons to be physically impotent. The organs are commonly so defective as to be wholly unfitted for the functions of either sex. It is not intended to be said that it is in all cases easy to assign the sex, but this is of minor importance. The main question is, whether the malformation is or is not such as to justify divorce, or to throw the imputation of illegitimacy upon children claiming to be the offspring of these beings.

Distinction of sex.—The determination of *sex* in these cases of *deformity* has been considered to be necessary under certain circumstances; as when, for instance, a title or entailed inheritance of lands is in question. Lord Coke

has stated that, according to the law of England, an hermaphrodite may be either male or female, and it shall succeed according to the kind of sex which doth prevail. Thus it is obvious that the law will decide each case according to the special circumstances attending it, but it must not be supposed that the decision is so easy as Lord Coke's doctrine would imply. There are many cases in which neither sex can be said to prevail: the beings are positively neuter. The chief character of the male would consist in the presence of testicles, and of the female in the presence of a uterus and ovaries. But in a case which occurred to Mr. Grigor, both the testicles and the ovaries were wanting; there were no essential characters of either sex, and during life it would have been impossible to say whether this being was male or female ('Cormack's Monthly Journal,' July 1845, p. 492.) In the same journal (p. 531) is reported another case, in which, notwithstanding the *external* resemblance to a woman, the presence of one testicle in the scrotum showed that this individual was of the male sex; yet this person passed for a woman until he had reached his 26th year! It is rare that there is external malformation without internal defect, and even when the female characters preponderate it is not improbable that the uterus or the ovaries may be absent, or the former may be malformed. Such beings are not known to menstruate, and even if there is a capacity for intercourse, they are permanently sterile. Sexual desires are, however, commonly absent.

When the person is young, mistakes respecting the sex are more common than at an advanced period of life. So soon as the age of puberty is past, certain changes take place in the configuration of the body, which may aid a medical practitioner in forming an opinion. Thus a grave tone of voice, the presence of a beard, the width of the shoulders, and narrowness of the pelvis, will indicate, *cæteris paribus*, the male sex; while when these conditions are absent, and there is a rotundity of the members, with want of prominence in the muscles, and a development of the breasts, the female sex predominates. Although no testicles are apparent, still the being may be of the male sex, since it is well known that in persons otherwise well formed, these organs occasionally are not found in the scrotum. Dr. Harris, of Clarksville, has related a singular case, in which, although no testicles could be detected, there was a short but naturally-formed penis, through which the being regularly menstruated! The female character predominated in the corporeal development, and there was the rudiment of a vagina. ('Med. Gaz.' vol. 40, p. 562). The fact that the being menstruated was here sufficient to cause it to be assigned to the female sex. How easily mistakes may be made in the sex of young children is shown by a case which occurred to Mr. Terry, and quoted in 'Cormack's Journal' (April 1845, p. 307.) The child was christened as a female, and was so considered by the parents for two months, when, owing to some defect in the passage of the urine, it was brought to Mr. Terry, and he found there was a malformation of the penis, no vagina, a scrotum with one testicle down, and the other descending. He therefore pronounced it to be a male, and its costume was altered accordingly. Another case occurred within my knowledge in 1872, in which a boy had been christened and brought up as a girl up to the age of 13, when, in consequence of a change in the voice and certain masculine habits, some doubt arose about the sex. On consultation with Sir W. Fergusson, he pronounced the child to be of the male sex, and its name and dress were altered accordingly. The testicles had been retained in the abdomen, and this probably deceived the accoucheur and the nurse at the time of the birth.

A case of doubtful sex occurred to Dr. Flume. The bodily formation was that of a male, and the external organs presented chiefly the male characters; but on an inspection there were found a uterus with ovaries and Fallopian

tubes. This being had never menstruated. The writer thinks that the shape of the pelvis furnishes the best criterion of the sex. ('American Journal Med. Sci.' 1872, p. 512.)

In a paper published in the 'Guy's Hospital Reports,' 1867 (p. 419), Mr. Bryant has described various malformations of the sexual organs. In one of these there was an entire absence of vagina, and in another a great development of the clitoris, causing it to resemble the male organ. There was a glans and prepuce, the latter being very large. There was a depression, but no urethral canal in the usual situation.

The presence of a beard and whiskers is usually considered to characterize a male, but the growth of hair on the chin and face is sometimes as profuse in women as in men. Dr. Chowne examined a woman named *Joseph Boisdechine*, on behalf of a man who was about to marry her, but who required a certificate as to the real sex of his intended wife before he entered into a matrimonial engagement! Dr. Chowne found nothing in her external conformation indicative of doubtful sex. The breasts were large and full, and the only resemblance to a male was in the abundance of beard and profuse whiskers. The upper lip was free from hair. (See 'Lancet,' Oct. 11, 1851, p. 335; Jan. 15, 1853, p. 66; 'Med. Times and Gaz.' Jan. 15, 1853, p. 71.) Dr. Chowne has published a full account of this case in the 'Lancet' for May 1, 1852 (p. 421). He has appended an engraving, which displays the female beard and whiskers. It is stated that this female was born with a quantity of hair on her chin, and that at eight years of age the beard was two inches long! In some instances this growth of hair in women is connected with sexual malformation. A beard and whiskers are usually considered to be the special appendages of the male sex, but no physiological reason can be assigned why they should not exist in a woman. In old women it is not unusual to see a growth of hair on the chin and lips, but it would not always be safe to rely upon this as evidence of the male sex at any time of life. I have known an instance in which a Roman countess had so much hair upon her chin that she was obliged to shave like a man. The following case of hairy development in a woman has been reported by Dr. Hills:—M. C., æt. 42, dressmaker, suffering from mania, was admitted into the Norfolk Asylum, 1865. She had a vigorous growth of hair on the lips and chin, for which depilatories had been used, but these made matters worse. The upper part of the body is masculine in form, and the breasts are undeveloped, as in the male sex. The lower part of the body is feminine in outline, and the voice has the feminine tone and character. The clitoris was largely developed, having a distinct prepuce. There were no testicles in the labia or in the inguinal canals. There was a distinct vagina, and the finger appeared to touch an os uteri. At an early age she had had the slightest possible signs of menstruation on three consecutive occasions. In her girlhood she would not associate with other children. While in the asylum she evinced strong sexual passions, and behaved indecently to the attendants. She had thick moustaches, and a full beard. ('Lancet,' Jan. 25, 1873, p. 129.) An engraving accompanies this paper, in which the hair and beard appear as much developed as in the male sex.

In some cases an external examination will entirely fail to indicate the sex, and even the opportunity of an examination of the dead body may leave the case in doubt. An ingenious writer has laid it down that there are analogous organs in the two sexes which are never found in the same subject, and the separate existence of which would enable us to determine the sex. These analogous parts are the penis and the clitoris; the scrotum and the labia majora; the testicles and the ovaries; the prostate gland and the uterus. It is a fact, that in the early development of these parts they are remarkably similar to each other, so that, until the commencement of the sixth week after concep-

tion the sex cannot be distinguished. After that period, by some process of evolution, which Darwin's theory fails to explain, they assume the more decided characters in one fœtus of the female and in the other of the male organs. Arrested or abnormal development during this period of conversion may account for the production of many sexual deformities. The division here suggested into corresponding sexual organs, is an artificial and, as facts show, an incorrect means of distinction. See report of a case, in which a body resembling the prostate gland and a uterus coexisted in the same being ('Med. Times and Gaz.' February 18, 1860, p. 177.) If a penis could always be clearly distinguished from a clitoris, and a scrotum from the labia, the rule might be serviceable; but it fails where it is most required, *i.e.* in the mixed conditions. As to the other means of distinction, even if correct, they will only enable an examiner to form an opinion of sex in the dead, whereas it is during the *life* of one of these beings that the law requires the aid of medical science in the solution of the question. The reader will find in the 'Medical Times and Gazette' an account of some remarkable cases of sexual malformation, by Mr. Curling (January 24, 1852, p. 84); by Mr. Fletcher (February 7, 1852, p. 136); by Mr. Broadhurst (February 21, 1852, p. 187); and by Mr. Waters (May 21, 1853, p. 538). Other cases, reported by Mr. Mann and Mr. Churchill, will be found in the 'Association Journal,' 1853 (August 19, p. 720, and September 9, p. 799, 'Med. Chir. Rev.' April 1844, p. 523).

Mixed cases.—A case has been already mentioned in which neither testicles nor ovaries were found after death, and more than one instance has occurred in which both have been found. This last condition is a case of intermixture of the sexes, or, physically speaking, real hermaphroditism in a physical sense, but of course without the functional power of self-impregnation. The following case is mentioned by Briand:—The subject was about 18 years of age when he died. The body was partly that of a male in configuration, and partly that of a female. An examination of the sexual organs, externally, led to no satisfactory distinction; and on inspection after death a testicle was found in what was supposed to be the left labium, with an epididymis and a spermatic cord attached to it as usual; while on the other side were an ovary, Fallopian tube and the rudiments of a uterus. The authenticity of this case was for some time a matter of dispute; but another, equally singular in its features, occurred to Prof. Mayer, of Bonn. This case clearly shows that such extraordinary deviations may be met with in nature. The person examined by Mayer died in 1835, at the age of 55. Different opinions had been formed respecting the sex by the first anatomists in Europe—some affirming that it was a male, while others contended that it was a female. This difference of opinion is sufficient to prove that an *external* examination does not always enable even a good anatomist to determine the probable sex of the being. In the dead body was found on the right side, a withered testicle, with a penis and prostate gland as male peculiarities; while on the left side there was an ovary, with a uterus, vagina, and Fallopian tube, as female peculiarities. ('Med. Gaz.' vol. 19, p. 135.) It should be stated that the general configuration of the body in this case was that of a woman, but there was a duality of sex: the right half of the body was male, and the left half female. The case of a male with many of the special characters of the female will be found described in the 'Lancet' for August 15, 1863 (p. 183; see also 'Amer. Jour. Med. Sci.' July 1871, p. 123). Conversely, Dr. Crecchio of Naples has given a full anatomical description of a female with many of the characters of a male. ('Ann. d'Hyg.' 1866, 1, 178). Some of these mixed cases of defective formation, as shown by preparations in the Guy's Museum, have been described by my colleague Mr. A. Durham ('G. H. R.', 1860, p. 421.) In two of these the sex was misrepresented during life, and only accurately determined after death. (See also

a paper by Mr. Woodward, 'Amer. Jour. Med. Sci.' July 1871, p. 123 and p. 249: and a case by Dr. Chesnet, 'Ann. d' Hyg.' 1860, 2, 206.) In some rare cases, the sexual organs in the male and female are double. These duplex beings are not necessarily impotent or sterile. In the male there may be virile capacity with either set of organs (p. 282), and in the female there may be double impregnation at different times. At p. 228 *ante*, a case is described in which a woman with a double vagina and uterus was impregnated at different times.

But cases may present themselves in which there is really no sex; the person cannot be assigned either to the male or female variety. M. Tardieu has given a report of a case apparently of this kind, in the 'Annales d'Hygiène' (1872, 2, 149.) In these beings it is not improbable that there may be rudimentary organs of one or the other sex. This being was married as a woman at the age of 25. Her husband lived with her for more than two years before he took steps for a separation. It then turned out that the physical conformation of this person rendered a consummation of the marriage impossible. The wife was found to have no organs essential to the female sex. There were neither breasts, vagina, uterus, nor ovaries. The pelvis was more like that of the male than of the female, and although then 27 years of age, the being had not menstruated and had not suffered from any periodical lumbar or abdominal pains. With the exception of the conformation of the pelvis and the absence of breasts, there was no male development. As on the one hand, there was an absence of vagina and uterus, and on the other of penis and testicles, it may be fairly said that this being had no sex. The wife was able to obtain from her own physician a medical certificate that she was of the female sex, and this led to some difficulty in reference to the suit of nullity. The difficulty was removed by M. Tardieu and M. Courty of Montpellier. Their conclusions were that Madame J. had only partially the appearances of the female sex. The most striking of these, width of the pelvis, was absent. She was not only impotent by reason of the absence of a vagina, but permanently sterile, inasmuch as there was every reason to believe that the internal female organs were absent or in a rudimentary state. This person must be placed among those monstrous subjects in which there is, properly speaking, no sex, and which cannot therefore enter into a marriage contract with either a male or a female.

Causes.—The causes of malformation of the sexual organs, as of all other kinds of monstrosity, are involved in mystery. We know that in the early stage of utero-gestation the sex of a fœtus cannot be distinguished; while, even when it has reached the fourth month, the genital organs are so similar that the sex can seldom be determined on inspection. Some organs or parts appear to be formed by equal and symmetrical portions, which gradually approximate and unite in the median line of the body. We observe this mode of union in the bones of the head, chest, and spine, as also in the various fissures (*raphes*) of the skin, which are the remains of a union between two equal and symmetrical parts of an organ, now become one. In regard to defects in organization, it may be remarked that they almost invariably occur in or about some part of the median line; and they appear to proceed from a mere arrest of growth or development in these particular parts, either on one side or both, during the early stage of uterine existence. In this respect the fissures sometimes observed in the palatine bones, in the palate itself, or in the lip—the openings occasionally noticed in the chest, diaphragm, anterior parietes of the bladder, as well as in the spinal canal, are precisely analogous in origin to the defective development of the sexual organs. There is nothing absolutely removed or lost, but there is an arrest of development: an opening, or fissure, which nature intended to be only temporary, becomes permanent by reason of an arrest of growth. In the evolution of the male genital organs, the part cor-

responding to the scrotum is at first always divided by a considerable fissure, to be afterwards united: and the penis and the clitoris having, at this period of life, much the same kind of physical exterior, the sexual organs cannot be well defined. Should this fissure in the male not be afterwards filled up, then we shall have the most common variety of sexual malformation—the hermaphroditic form, with the male characters predominating. These observations are not, of course, applicable to those cases in which the sexes are positively mixed. In these instances there appears to be a separate sexual organization on the two sides of the body, with an imperfect development of each set of sexual organs. According to Weber, there is in the prostate gland of every male a rudimentary uterus. (Baly and Kirkes' 'Recent Advances in Physiology,' 1848, p. 112; also papers by Dr. Knox, 'Med. Gaz.' November and December, 1843; and M. Tardieu, 'Ann. d'Hyg.' 1872, 2, 398.)

Dr. Knox thus accounts for the hermaphroditic form. It depends, in his view, on a law in the construction of the genital organs. The embryo is at first hermaphroditic, both sets of organs being present. If the cause determinative of sex should act in an efficient manner, one set of organs nearly disappears and the fœtus becomes male or female accordingly; but if not, nature adheres to her original type, and both kinds of organs remain. The type of the generative organs even in the highest orders of animals is hermaphroditic. (On Hermaphroditism.) This theory will not explain how duplex organs of the same sex are occasionally found, as an additional testicle or penis in the male, and an additional uterus and vagina in the female (p. 228 *ante*). A few years since, a youth was exhibited in London, in whom there were two distinct well-developed penes with one testicle to each. One circumstance is worthy of notice—namely, that sexual monstrosity appears occasionally to occur in the successive pregnancies of a well-formed woman. The late Dr. Lever met with a singular instance of this in a woman æt. 28. She had given birth to four children in three confinements, the first being a twin-labour; both the children males, and in both there was an arrest of development of the sexual organs. On the third delivery the child was a male, and its sexual organs presented the same deformity as those of the twins. ('Med. Gaz.' vol. 38, p. 946).

Medico-legal relations.—These beings, owing to defective development, are impotent and sterile. Questions connected with the legitimacy of offspring, divorce, paternity, and affiliation may, therefore, be raised with respect to them. This part of the subject has been already considered (pp. 239, 277). Sexual monstrosity is not a ground for depriving a being of the rights of inheritance, except under peculiar legal conditions. Thus a right of succession or inheritance to landed estate may depend upon the *sex* of the offspring: as where, for instance, two children are born, the first an hermaphrodite, the second a well-formed male child. The parents die, and a title of nobility or lands may fall to the first-born male. Here the sex of the firstborn must be determined before possession can be had. In a case of this kind, if medical evidence should establish that male peculiarities predominate in the firstborn, the second child would be cut off. Again, if an estate were limited by entailment, as where it is settled upon heirs (male or female) of a particular family, the birth of an hermaphrodite, an only child, would create the legal necessity for a positive determination of the predominance of sex. So, if an hermaphrodite live but a few minutes after birth, and then die, the rights of persons may be subsequently much affected by the medical attendant having come to an opinion respecting its sex. Since we cannot determine under what circumstances litigation may ensue, it is always right in a doubtful case to observe the sex, and make notes on the spot when a child thus malformed survives its birth but for a short period. The question of tenancy by courtesy, or the

right of the husband to landed estate of which the wife was seised, will depend entirely upon the attention of the accoucheur to this point. (See *Tenancy by Courtesy*, *ante* p. 214.)

The determining of the sex by a proper examination at the time of birth, and the making a note thereof, is a special duty of the accoucheur. To find that at birth children are pronounced to be girls, and turn out in after life to be boys, however venial in an old midwife, is not creditable to a member of the medical profession who is supposed to possess sufficient anatomical knowledge. Such an occurrence causes great distress to the parents.

When these beings have reached adult age, other questions may arise with respect to them. According to an old law of France, an hermaphrodite was permitted to choose one sex, and thereafter compelled to keep to it! The English law is not so liberal: it does not allow them to select their sex, but determines it for them by medical evidence. Hermaphrodites, or sexual monsters, were formerly ranked with infamous persons; and it has been a grave question in our Courts, whether the calling a man an hermaphrodite was not such a libel or slander upon him as to render it a ground for a civil action. In a case reported by Chitty ('Med. Jur.' p. 374), the use of this term was held not to be actionable, unless it was proved that it had been attended with special damage. A dancing-master brought an action against a person for calling him an hermaphrodite, and it was decided that it was not sustainable:—1. Because such a union of the sexes cannot exist in fact, and everyone must be supposed to know it; consequently, the assertion could not be supposed to prejudice. 2. Because, admitting the possibility of such a double function, the party would be just as good, and perhaps, even a safer, dancing-master than if only one perfect sex had been discoverable; consequently, the words would not, in legal presumption, injure him in his profession or occupation!

I am indebted to a learned member of the bar for a note on the remarkable case of the *Chevalier d'Eon*. There was a great dispute concerning the sex of the Chevalier, and it came before a Court of Law on an action to recover a wager under the following circumstances:—The plaintiff claimed of the defendant a sum of 300*l*. On the 4th of October 1771, plaintiff paid to defendant seventy-five guineas, on the condition that he, the plaintiff, should receive from the defendant a sum of 300*l*. in case the Chevalier d'Eon should at any time prove to be a female. (*Da Costa* v. *Jones*, 2nd vol. 'Cowper's Reports,' p. 729.) The case was tried before Lord Mansfield, at Guildhall; and the jury found a verdict for the plaintiff, with 300*l*. damages, thereby affirming that the Chevalier was a *female*. A motion was subsequently made on behalf of the defendant to arrest the judgment, or at least to stay the proceedings, on the ground that the action could not be supported, as being upon a wager tending to introduce indecent evidence, and also as being one which materially affected the interests of a third person. The question thus raised on the motion was argued before the Court of King's Bench, and the judges unanimously agreed that the judgment must be arrested; the law not allowing wagers upon subjects leading to the introduction of indecent evidence (this being *contra bonos mores*), nor upon such subjects as were calculated to have an injurious effect upon the interest or character of a third person. Irrespective of this decision, the verdict was based upon what subsequently turned out to be untrue. The Chevalier was really a *male*, and not a female. He was carefully examined by Sir Anthony Carlisle, who satisfied all present of the perfect condition of his testicles. (See 'Paris and Fonblanque,' vol. 1, p. 229.)

It would appear, from a singular case reported by Dr. Barry, U.S., that in the United States the rights of citizenship, and the privilege of voting for members of Congress, have depended on the determination of sex. In March

1843 he was requested to examine the case of *Levi Suydam*, aged 23 years, a native of Salisbury, Con. At the exciting and warmly-contested election of the spring of that year, almost everything bearing the semblance of the human form, of the male sex, is stated to have been brought to the ballot-box. It was at this time, and under these circumstances, that the above-mentioned person was presented by the Whigs to be made a free*man*; he was challenged by the opposite party, on the ground that he was more a female than a male, and that in his physical organization he partook of both sexes. The following was the result of the *first* examination by Dr. Barry:—There was a mons veneris, covered with hair in the usual way; an imperforate penis, subject to erections, about two-and-a-half inches in length, with corresponding dimensions; the dorsum of the penis was connected by the cuticle and cellular membrane to the pubis, leaving about an inch and a half free, or not bound up, and towards the pubic region. This penis had a well-formed glans, —a depression in the usual place of the outlet for urine, with a well-defined prepuce. The scrotum was not fully developed, inasmuch as it was but half the usual size, and not pendulous. In the scrotum, and on the right side of the penis, there was one testicle, of the size of a common filbert, with a spermatic cord attached. In the perineum, at the root of the corpora cavernosa, an opening existed through which micturition was performed: this opening was large enough to admit the introduction of an ordinary-sized catheter. Having found a penis and one testicle, although imperfectly developed, Dr. Barry, without further examination, gave it as his opinion that the person in question was a *male citizen*, and consequently entitled to vote and enjoy all the privileges of a free*man*!

On the morning of the first Monday in April (election-day), Dr. Barry was informed that Dr. Ticknor would oppose this person's admission on medical grounds. Suydam came forward; and Dr. Ticknor objected to him as a *female*, and therefore not entitled to vote. Dr. Barry then stated to the meeting, that, from an examination he had made, he considered the person in question to be a male; and requested that Dr. Ticknor might, with the consent of Suydam, retire into an adjoining room, and examine him for himself. This was done, when Dr. Ticknor ultimately came to the conclusion that this person was really a male. He was accordingly admitted a free*man*, and his vote was received and registered.

A few days after the election, Dr. Barry heard that Suydam had regularly menstruated as a woman! His sister informed him (Dr. Barry) that she had washed for him for years, and that he menstruated as regularly, but not so profusely, as most women. When questioned, he very unwillingly confessed that such was the fact. He was again examined by the two physicians, when the following additional particulars were elicited:—Said Suydam was five feet two inches in height, light-coloured hair, fair complexion, with a beardless chin, and decidedly a sanguineous temperament, narrow shoulders, and broad hips—in short, every way of a feminine figure. There were well-developed breasts, with nipples and areolæ. On passing a female catheter into the opening through which micturition was performed, and through which he again stated he had a periodical bloody discharge monthly,—instead of traversing a canal and drawing off urine, the catheter appeared to enter immediately a passage similar to the vagina, three or four inches in depth, and in which there was a considerable play of the instrument. He stated that he had amorous desires, and that at this time his inclination was for the male sex: his feminine propensities, such as a fondness for gay colours, for pieces of calico, comparing and placing them together, an aversion for bodily labour, and an inability to perform the same, had been remarked by many. Dr. Barry *further learned from* an old lady who was present at the birth of Suydam,

that on the second day after his birth, Dr. Delamater, who attended as accoucheur, made with an instrument the opening through which he had ever since performed micturition. ('American Jour. of the Med. Sciences,' July 1847.)

This was certainly an embarrassing case; one to which Lord Coke's rule for a decision, *i.e.* the prevalence of either sex, is hardly applicable. The presence of a penis and one testicle referred the being to the male sex, while the bodily configuration, and still more strongly the periodical menstrual discharge, referred him to the female sex. The right of voting might have been fairly objected to, because, while the female characters were decided, the organs indicative of the male sex are described as having been imperfectly developed.

Dr. Hartshorne, an American physician, quotes a case in which an attempt was made by Dr. Gross, a surgeon in the United States, to destroy all sexuality, and thereby all rights of citizenship, in the case of an infant whose sexual organs were imperfect. (A report of this case will be found in the 'American Journal of Med. Sci.' for Oct. 1852, and in the 'Edin. Monthly Jour.' for Jan. 1853.) The child, when seen by Dr. Gross, was three years of age, and had always up to that period been regarded as a girl, and in fact had been so pronounced at her birth by the accoucheur. At the age of two years she began to evince the taste, disposition, and feelings of the male sex: she rejected dolls and similar articles of amusement, and became fond of boyish sports. She was well-grown, perfectly healthy, and quite fleshy. Her hair was dark and long, the eyes black, and the whole expression most agreeable. A careful examination of the external genitals disclosed the following circumstances:—There was neither a penis nor a vagina; but instead of the former there was a small clitoris, and in place of the latter a superficial depression or cul-de-sac covered with mucous membrane, and devoid of everything like an aperture or inlet. The urethra occupied the usual situation (in the female?) and appeared to be natural; the nymphæ were remarkably diminutive, but the labia were well developed, and contained each a well-formed testicle quite as large and as firm as this organ generally is in boys at the same age. The hips, chest, thighs, and upper limbs were perfect. From this description it is pretty clear that the child was an *androgynus*, *i.e.* there was imperfect development of the sexual organs, with predominance of those of the male. There was no indication of uterus or ovaries, nor any external peculiarity, except that which is frequently met with in hermaphrodites, in which there is an arrest of male development, but no intermixture of the sexes. Dr. Gross considered that, for the child's future welfare and happiness, it would be better that it should have no testicles at all, than that it should retain them under such an imperfect development of the other organs. He therefore removed them by operation from the labia or divided scrotum, and had the dissatisfaction to find that they were perfectly formed in every respect, and that the spermatic cords were quite natural. The operation was performed in July 1849, and three years subsequently (in 1852) it was found that emasculation was complete, for the disposition and habits of the being had materially changed, and were those of a girl: she was found to take great delight in sewing and housework, and she no longer indulged in riding on sticks and other boyish exercises.

The reasons assigned for the performance of this operation—namely, the entire deprivation of sex, and thereby of any sexual feelings in after-life—appear to me to be unsatisfactory. It is clear, from Dr. Gross's description, that this being was deprived of the rights and privileges of a *male* by the removal of the testicles. (See the case of *Levi Suydam*, *ante*, p. 284.) Dr. Gross appears to have contemplated the case only in a matrimonial point of view:

but in a country where the rights of citizenship and power of voting for members of Congress are so highly valued—where they depend on direct proofs of sex, and are so strongly contested by opposing parties—it is a serious question whether he has not here struck a severe blow at the political rights of such beings, in thus wilfully destroying the physical evidence of the male sex! In this country it might have been a question whether he had not rendered himself liable in damages for thus tampering with the laws of nature.

Concealed sex.—It is almost superfluous to say that in some cases sex cannot be determined by the dress, appearance, or even voice of the individual. Cases in which males have passed for many years unsuspectedly as females, and *vice versâ*, have been numerous. In some instances the secret has been disclosed only by death. Facts of this kind belong rather to the annals of imposture than to those of medical jurisprudence. A somewhat singular case of this description, that of *Eliza Edwards*, occurred to me in 1833. An unclaimed body was sent to Guy's Hospital, by the Inspector of anatomy, as a female: on removing the dress, however, it was found to be that of a *male!* From some suspicion respecting the cause of death, and the habits of this person, a Coroner's inquest was held. It turned out that the deceased, whose age was 24, had assumed the dress of a female at the age of 14, and had performed in many parts of England as an actress. The features had a somewhat feminine character; the hair was very long, and parted in the centre; the beard had been carefully plucked out, and the remains of this under the chin had been concealed by a peculiar style of dress. It was remarked during life that the voice was hoarse. The breasts were like those of a male, and the male sexual organs were perfectly developed. They had evidently been subjected to great stretching, and appeared to have been drawn forward and secured to the lower part of the abdomen. The state of the rectum left no doubt of the abominable practices to which this individual had been addicted. It was found that death had taken place from natural causes. The most remarkable circumstance in this case is, that the deceased had been attended in his last illness by an eminent physician (now deceased) for disease of the lungs; and so well was the imposition maintained, that his medical attendant did not entertain a suspicion of the real sex of his patient! ('Med. and Phys. Jour.' Feb. 1833, p. 168.)

A more remarkable case, in which a female had successfully personated a male for many years, occurred in 1865. I refer to the case of *Dr. James Barry*, who was well known as Staff Assistant-Surgeon and Inspector of Hospitals. In the following description the sex is retained under which Dr. Barry was known while living. He died in 1865, at the age of 80, and although suspicions had existed among those who had personally known him, that he laboured under some sexual defect, it was only proved after his death that he was really a woman. He is reported to have been the illegitimate child of a nobleman. When, where, and how he passed through his medical studies no one knows, but he contrived to obtain a diploma as Doctor of Medicine from Edinburgh when only fifteen years of age. The learned examiners of the Edinburgh College may at this time have been easily deceived respecting the sex of the candidate. The young physician entered the army, and served at the Cape of Good Hope, St. Helena, the Ionian Islands, Malta, and the West Indies. Although eccentric, he is said to have displayed on various occasions great professional skill. He was noted for being very quarrelsome, and on one occasion at the Cape he challenged and fought a duel with a brother officer. In due course he retired from the service, received a pension, and was made Inspector of Hospitals. In 1857-8, and subsequently, I saw Dr. Barry, and had the opportunity of observing him for several days. His appearance and manners were effeminate. His face and hands were smooth and white, like those of a woman; he had no beard or whiskers. He was irritable and vain: he was well-informed

and able to talk on most professional subjects in a manner which showed that he had studied them with care. His habits were peculiar; he was a vegetarian in diet, and at dinner ate fruit or vegetables, which he first soaked thoroughly in water in order to remove, as he informed his friends, the animalculæ upon them. He was thin, and in stature resembled a woman, his limbs being small, but in good proportion. His voice was shrill and squeaking, quite unlike that of a man. The impression left upon the mind of all those who saw him was that he laboured under some sexual malformation. After his death, however, it was found that he had the sexual organs of a woman. He had specially desired that no post-mortem examination of his body should be made, but this order was disobeyed, a special report having been ordered by the authorities. It is difficult to comprehend how, in assuming the attributes and duties of an army medical officer, he could have so successfully maintained the deception through a long life. Whether he menstruated or not does not appear. Although always accompanied by a black man as a valet, he was very secret with him, and would not allow him to be present while he was dressing. He is said to have always worn a peculiar and tight-fitting dress. His military companions and associates may have rested content with the belief that he was labouring under some sexual defect; but the Army Medical Board appears to have been easily deceived, as it did not hesitate to grant titles, privileges, and pensions to a woman wearing the attire of a man. With such a successful precedent before them the Examining Board of Edinburgh are hardly justified in excluding women from professional study and examination.

IMPOTENCY.

CHAPTER 71.

IMPOTENCY—PHYSICAL CAUSES—PROCREATIVE POWER IN THE MALE—PUBERTY—CONVICTIONS FOR RAPE—AGE FOR VIRILITY—LOSS OF VIRILE POWER BY AGE—POWERS OF CRYPSORCHIDES AND MONORCHIDES.

Definition.—Impotency is defined to be an incapacity for sexual intercourse. It may depend—1st, upon *physical*, 2ndly, upon *moral* causes. With regard to the *moral causes* of impotency they do not concern a medical jurist. Such causes are not recognized by law, and he has no duty to perform beyond the application of the principles of medicine to the purposes of the law.

Causes.—Impotency may arise from *age*,—from certain *physical causes*, *e.g.* disease,—or from congenital malformation or *defect*. With regard to *physical* causes, a distinction must be made between those which are remediable and those which are not. The presence of disease of the testicle, such as atrophy or fungous tumours, may give rise to incapacity; but the incapacity may be sometimes removed by an operation or by medical treatment, and therefore the physical cause may be removed :—in other words it is *remediable*. To such cases as these the law does not extend; but it is always expected, in alleged incapacity, that the practitioner examined on the subject should be able to say whether there is or is not a prospect of cure. Upon this point a knowledge of his profession can alone assist him; no rules can be laid down for his guidance, for there may not be two cases that will precisely resemble each other in their features. Hence it will be necessary to point out the chief causes of impotency which are of an irremediable nature, or those in which the inca-

pacity is absolute and permanent; a point upon which a medical opinion is chiefly required.

In strictness of language, the definition of impotency, as above given, may be applied to a woman as well as to a man; and, undoubtedly, a physical incapacity for sexual intercourse may exist in either sex. As an instance of this incapacity in the female, may be mentioned occlusion of the vagina—a condition not necessarily indicative of sterility. The mere occlusion of the vagina may be a remediable form of the malady; but its entire obliteration would be absolute and irremediable. This latter condition, however, is the only instance of complete impotency in a female. A protrusion of the uterus or of the bladder into the vagina is mentioned by some writers as a cause of physical incapacity for intercourse; but these forms of disease may commonly be remedied by art, and therefore require no further notice in this place.

In professional language, the term *impotency* has been hitherto applied exclusively to a defect in the *male* sex; and the term *sterility* is usually confined to all those conditions in the woman which not only render intercourse impossible, but which render it unfruitful. A man may, however, be sterile without being impotent—a condition observed in some crypsorchides; or he may be impotent without being sterile, as where proper intercourse is prevented by reason of physical defect in the virile member, although the testicles may be in a normal condition. See on this subject, Curling on 'Sterility in Man' (1864). This author points out that sterility in the male, apart from impotency, may depend on three causes—1st, malposition of the testicles; 2ndly, obstructions in the excretory ducts; and 3rdly, impediments to the escape of the seminal fluid. A man may not be impotent, *i.e.* not incapable of intercourse, but, by reason of one of the conditions above-mentioned, such intercourse would be unfruitful. In reference to the male, the English law does not appear to go beyond the establishment of impotency from some clear and demonstrable cause, and, unless the alleged sterility were accompanied by impotency, it would take no cognizance of that condition. Sterility from such causes could hardly be demonstrated during the life of a person—it would rest chiefly on presumption or probability.

Procreative power in the male. Puberty.—Until the period of puberty the testicles are small, and they increase very little in size in proportion to other parts. Mr. Curling found that the size of the seminal tubes differed but little at the ages of 18 months and 8 years. The sexual function in the male depends entirely on the proper development of these organs; but the age at which it appears differs in different persons. The age of puberty in a healthy male in this country varies from 14 to 17 years; its appearance is, however, affected by climate, constitution, and the moral circumstances under which the individual is placed: in some cases it is not fully developed until the age of 21.

The access of puberty in the male is indirectly connected with the subject rape. A boy under the age of *fourteen years* is presumed in law to be incapable of committing a rape. (1 Hale, p. 631, and Mathew's 'Digest,' p. 57.) In a recent case in which a boy of this age (14) was charged with rape the learned judge directed an acquittal. Although in other felonies sometimes *malitia supplet ætatem*, yet as to this particular act, the law presumes him to be impotent. Recorded cases, however, show that boys of this age are not always impotent. Whether a boy under fourteen can or cannot be guilty of a rape, ought to depend partly on the proof of guilty knowledge, and partly on bodily capacity to commit the crime. The last may give rise to a medical question respecting the age at which virile powers are acquired. Instances of precocious puberty are, it is well known, very frequent. According to the statute law now in force proof of penetration only is required to complete the crime. As proof of emission is, therefore, no longer necessary, it may become a tech-

nical question whether, admitting the existence of guilty knowledge, the crime might not be completed in law long before the signs of puberty were fully developed. This question is very likely to arise, where boys are charged with the crime of rape upon female infants. The proof of the fact must rest with the medical evidence. It is singular that the present English law of rape may, in strictness, be made to include eunuchs and infants, as well as male adults. In *Reg.* v. *King* (York Winter Assizes, 1853), a boy aged 15 was convicted of rape on a girl under 10 years of age. In a case elsewhere related (see RAPE), a boy aged 19 communicated syphilis to a girl of 6 years of age. It appears that in India puberty shows itself much earlier in the male. Dr. Chevers, quoting from the 'Nizamut Adawlut Reports,' states that a boy of 13 or 14 years of age was found guilty of rape and sentenced, in consideration of his youth, to three years' imprisonment. A lad of 14 was convicted of rape on a girl of the same age; and in another case a boy only *ten years* old was convicted of rape on a girl 3 years of age! He was sentenced to a year's imprisonment. ('Med Jur. for India,' p. 463.)

The seminal secretion in the male is not considered to be prolific until it contains those peculiar filiform bodies which are known under the name of *spermatozoa* or zoosperms. These are regarded by some physiologists as parasitic animals, but by others, with some probability, as freely moving cilia. ('Recent Advances,' Baly and Kirkes, 1848.) All agree that they are normal and essential constituents of the healthy and prolific seminal fluid. They are peculiar to the spermatic secretion, and, in healthy males, are always present in it after the age of puberty. They disappear in certain states of disease, and sometimes in advanced age: they have not been found in the undeveloped testicles of crypsorchides. In cases in which they are absent, from whatever cause, it is a fair inference that the person is impotent, or that he has lost the power of procreation. (See on this subject 'Observations on Sterility in Man,' by T. B. Curling, 1864.) In this pamphlet one case is related in which a man, æt. 42, who was married, and whose wife had borne a son then 8 years of age, had died after four days' illness from strangulated hernia. The testicles, from the fact of their being found in the inguinal canals, were examined separately by Drs. Gosselin and Godard, and no spermatozoa were discovered in either of them (p. 9). But these may have been formerly present although absent at the time of examination, as the child begotten was then eight years of age. During this long interval, the secretion may have undergone a change, and have become unprolific.

The direct agency of the spermatozoon in fecundation has been investigated by the late Mr. Newport. ('Philos. Trans.' 1853, vol. 143, part 2, p. 234.) I can here only briefly allude to his researches. His experiments were performed on the amphibia, by the aid of the microscope. It would appear from these (and his inferences are fairly applicable, within certain limits, to animals and man), that the presence of spermatozoa in the seminal secretion is indispensable to the impregnation of a female,—in fact, that the fecundating power resides in these living and moving molecules. It is a curious fact, too, that active motion in the spermatozoon is essential to fecundation: thus, when they are motionless or dead, ova are not impregnated by them, and the power of impregnation is in proportion to the activity of this motion. The impotency arising from advanced age in the human subject, is probably not so much owing to a deficiency of spermatozoa in the male secretion, as to their power of motion being exceedingly feeble. We learn, further, that impregnation was more certain when the quantity of spermatozoa supplied to the ovum was not reduced to a minimum: hence, whatever may be the precise quantity of the spermatic secretion necessary to effect normal impregnation, it is thus proved that a definite quantity of spermatozoa, or of healthy spermatic fluid, is re-

quired to fecundate. Exhaustion from any cause, and probably from venereal excess or self-abuse, may lead to a loss of procreative power, by reducing the number and diminishing the active moving powers of the spermatozoa. How fecundation is effected by this incorporation of the spermatozoa with the ovum, it is impossible to say; but the embryo is not the product of the evolution or development of a spermatozoon. The nature of the change is a mystery which appears to be placed beyond the power of human research. The existence of sterility in the male, as well as in the female, and a want of procreative power in the sexes when the individuals are otherwise healthy, are to some extent explained by the results of Mr. Newport's researches. Without the penetration of the ovum there is no fecundation, and the conditions and circumstances which affect this result are very numerous.

In reference to the human ovum, there is an absence of that immediate or direct contact with the male fluid which occurs in the amphibia. The human ovum may come into contact with the spermatozoa either at the ovary, or in any part of the Fallopian tube, or in the cavity of the uterus; but the spermatozoa may lose their active motion before reaching the cavity of the uterus or the tube; they may not be in sufficient number, or may not meet the ovum under circumstances favourable to penetration. It is probable that the ovum may maintain its vital power in the body of the female for a considerable time after its extrusion; and although the chances of impregnation may be thereby reduced, yet fecundation may occur if all other circumstances be favourable. This would explain the occurrence of conception at any time between two menstrual periods. (See 'Date of Conception,' p. 244.)

Impotency from age.—It may be fairly assumed that a male is incapable of procreating until spermatozoa have appeared in the seminal secretion, and that he loses this power when they disappear. The *age* at which they are formed varies with all the causes that affect puberty. Mr. Curling has informed me that he found them in the secretion of a boy aged 18; but there is no doubt that in many cases they appear much earlier than this. This gentleman found spermatozoa in the liquid taken from the testicles of a man upwards of 70 years of age, and on one occasion in the testicles of a person aged eighty-seven. Wagner states that they are to be found in the secretions of men between 70 and 80 years of age. M. Rayer found them in the secretion of a man æt. 82 years ('Gaz. Méd.' Juin 2, 1849). Other cases of a similar kind are recorded by Debrou. ('Gaz. Hebdom.' 4th Janvier, 1861, p. 6.) Facts tend to render it highly probable that the fecundating power may be retained by the male up to the age of 100. M. Dieu of the Invalides has given the results of 105 autopsies of men between the ages of 64 and 97. There were no spermatozoa in 64 of the 105, *i.e.* in 61 per cent. no spermatozoa were found. Four of the cases were nonagenarians: of these none had spermatozoa. ('Amer. Jour. Med. Sci.' April 1868, p. 523.) According to Dr. Duplay, the seminal fluid of old men contains spermatozoa even when they are beyond the age for fecundation ('Med. Times and Gazette,' June 4, 1853, p. 581); but he does not state the circumstances which enabled him to arrive at this conclusion.

Sexual propensities are often strongly developed in children, and they may be prolific at an early age. Dr. Rüttel met with a case in which a girl at the age of 14 became pregnant by a boy of the same age. (Henke's 'Zeitschrift der S. A.' 1844, p. 249.) This is the earliest age at which, so far as I can ascertain, the procreative power has appeared in the male. It will be observed that this is the precise age at which, according to our law, a boy is incapable of committing a rape. Dr. Hartshorne refers to an instance of extraordinary development of the male sexual organs in a child 4 years old. ('Amer. Jour. Med. Sci.' Oct. 1852, p. 561.) In a case of contested legitimacy or affiliation, this question regarding the age at which a procreative power appears in the male may have

an important bearing on the issue. Thus the person may be so *young* as to render it impossible that he should be the father of a child imputed to him. Cases involving questions of legitimacy on this ground are not heard of in the present day: but in ancient law-books there are decisions relative to the illegitimacy of children born during marriage, because the alleged fathers were 7, 6, and even 3 years old! (Amos.)

The following case in reference to the affiliation of children occurred in 1840:—A woman wished to affiliate a child on a youth who was in his *sixteenth* year. The boy denied that he was the father of the child; and there was reason to suspect that the imputation had been wrongly thrown upon him in order to divert suspicion from the real offender. There was some difficulty in this case; but it appears to me that the rule for a medical man to follow on these occasions is this;—not to regard the mere *age* of the youth, whether he is above or below the average age of puberty, but to observe whether the sexual organs are fully developed, and whether there are about him any of the marks of virility, indicated by muscular development, the growth of a beard, and a change in the voice. If these signs are present, whatever may be his age, there is strong reason to suppose that the sexual functions are developed. We occasionally hear of instances of extraordinary precocity; but the development of sexual power is generally accompanied by other well-marked changes in the person. Sometimes these changes do not make their appearance until after the age of 21.

On the other hand, it may be a question at what time the procreative power disappears in a male. That impotency is one of the natural consequences of *advanced age* is undoubted; but this, as we know, forms no legal impediment to the marriage of parties, however old. The legal presumption is, that the generative faculty does not disappear through age; and if this be alleged, and legitimacy disputed on this ground, it must be satisfactorily proved by those who would benefit by the allegation. This amounts to almost an impossibility, because it is well known that there is no fixed age at which the sexual functions cease either in the male or female; and individuals, at least of the male sex, who had passed the ages of 60, 70, and even 80 years, have been known to be capable of fruitful intercourse. M. Duplay believes, from his anatomical observations on the bodies of aged persons, that the causes of impotency (sterility) in advanced age are to be found rather in the excretory than in the secretory apparatus. Thus he has met with obliterations in the canal of the epididymis, the vas deferens, and the vesiculæ, the effect of which is to prevent the accumulation and passage of the seminal fluid. ('Med. Times and Gazette,' June 28, 1856, p. 650.) Lord Erskine, in the *Banbury Peerage* claim, quoted the case of Sir Stephen Fox, who was married at 77, and had four children, the last when he was 81. Dr. Schneider met with a case in which a man of 71 had a child by his wife, who was only 17, the figures representing the respective ages being here precisely reversed. (Henke's 'Zeitschrift,' 1842, 2, 165.) Dr. Rüttel mentions the case of a man who, at the age of 92 years, married and had two children by his wife. The retention of procreative power became a question in the case of *Johnson* v. *Johnson* in the Vice-Chancellor's Court, January, 1871. In 1845, Mr. Johnson, a widower, being then upwards of 60 years of age, married his second wife, a factory girl of 16. She obtained great influence over him, and induced him to quarrel with the children of his first marriage, the plaintiffs in the suit. In 1861, when Mr. Johnson was upwards of 77 years old, Mrs. Johnson bare a child, which died. In 1862 and 1865 two more children were born, who were the defendants in the suit. As Mr. Johnson would have been of the age of 78 and 81 at the time these children were born, it was alleged that they could not have been begotten by him and were not his children. Mr. Johnson died in

1869, leaving a large amount of property, with a will and codicil, affecting the two families. Vice-Chancellor Malins declined to make any order. He thought it hopeless for the plaintiffs to attempt to make out that the children of Mrs. Johnson, *born while* her husband was living with her, and designated by him *as his* children in his will, were not his children. It was, however, a very significant fact in the case, that the testator lived fifteen years with his young wife without having had any children, and that they rather rapidly appeared in succession when he was between 77 and 81 years old. When the procreative power even appears to be lost at an advanced age, the stimulus for intercourse is often very great. Dr. Rüttel mentions cases in which these erotic feelings were remarked by him in reference to men between 75 and 86 years of age. (Henke's 'Zeitschrift,' 1844, p. 252.) In all cases of prolonged virility it is observed that the bodily and mental powers are also retained in an extraordinary degree, showing the close relation which exists between the sexual function and corporeal development, even to the latest period of life.

The English law on this subject was clearly laid down in the *Banbury Peerage* case, brought before the House of Lords in 1806. Lord and Lady Banbury had been married 21 years, without having had issue, when his lordship died at the age of 85 years. The peerage was claimed by the descendants of an individual who called himself the son of Lord Banbury; but, in fact, it was alleged that he was the son of Lady Banbury by an adulterer, during her husband's life. According to the evidence, Lord Banbury did not appear to have been aware of his existence, and the child had always been known by another name. (Amos, 'Med. Gaz.' vol. 7, p. 741.) One of the grounds upon which the legitimacy of the descent of the claimant was contested, was that the deceased nobleman had become impotent through *age*; but it was argued by Sir S. Romilly that the law placed no limit on the powers and faculties of men in this respect. The assumed impotency of the husband on the ground of age, could not be admitted as a proof of the illegitimacy of the alleged offspring. In 1813 the House decided against the claim, but not on the ground of impotency from age in the husband. It was proved that Lord Banbury was hale and hearty at the time of his death; but the moral circumstances of the case, especially the *concealment* of the birth of the child from the husband, were considered sufficient to prove that the child through whom the claim was made, was not the offspring of Lord Banbury. This case incontestably proves that there may be capacity of intercourse and possibility of access on the part of a husband, yet every species of moral evidence will be admitted to rebut the legal presumption of legitimacy when there are reasonable grounds for disputing it. Sir S. Romilly remarked, in reference to the retention of procreative power in advanced age, that the liberality of the English law on this subject was excessive; for there was no age, from *seven* upwards, at which a man had been denied the power of procreating children! (See, in reference to this subject, Henke's 'Zeitschrift der S. A.' 1842, p. 332.) Males at the age of 14, and females at the age of 12, are legally competent to contract marriage.

Impotency from local disease or accident.—The loss or destruction of the penis or testicles, either by disease, accident, or from necessary operations, would be sufficient to render a man irremediably impotent. The loss of one or both testicles, from any of these causes, would be indicated by the presence of distinct cicatrices in the scrotum. When both have been removed by operation, the person is incurably impotent; but if the organs are healthy, a sufficiency of the spermatic fluid to confer procreative powers may remain in the ducts for two or three weeks after the operation. Thus it is that animals have been known to be prolific for a certain time after castration; and one case is on record in which a man, both of whose testicles had been carried off by gunshot, is said to have retained the power of impregnating his wife after

the healing of the wound. (See a paper by Dr. Krügelstein, Henke's 'Zeitschrift,' 1842, 1, 348 and 352.) The loss of *one* testicle only, by accident or operation, does not render a man impotent. *Monorchides*, as they are called, have been known to be prolific. Cases of this kind must not be confounded with those in which one or both testicles have not descended into the scrotum.

Monorchides and Crypsorchides.—In some rare instances the testicles do not descend into the scrotum at the usual period, but one or both may remain in the abdomen, or in the inguinal canals, and only descend some time after birth; or one may be found in the scrotum, and the other remain during life in the abdomen; or both may be retained in the abdomen. In some cases of partial descent the organs have been mistaken for and treated as ruptures by the application of a truss! (Henke's 'Zeitschrift der S. A.' 1844, 1, 249; Curling on 'Disease of the Testis,' 2nd ed. p. 31.) In one instance the attempt to reduce the tumour, mistaken for hernia, and the application of a truss, caused the death of the person. ('Med. Times and Gaz.' March 2, 1861, p. 240.) When one testicle only has descended, there is no ground, *cæteris paribus*, to impute impotency: the descended organ has been found healthy and to contain spermatozoa, while the retained testicle and its ducts have not been found to contain spermatozoa. Mr. Curling has collected six of these cases, of which four fell under his own observation. ('On Sterility in Man,' 1846, p. 6, and 'Med. Times and Gaz.' Feb. 23, 1861.) When neither testicle has descended, the scrotum will be found empty, without any scar indicative of a removal by operation, but the other marks of virility may still be present. These persons have been called *Crypsorchides*, while those who have only one testicle apparent are called *Monorchides*. It has been stated that in all cases of non-descent, the testicles are congenitally defective, and further, that the persons, although capable of sexual intercourse, are incurably sterile.

The non-descent of the testicles is a state rarely seen. Mr. Marshall met with only one case of non-descent of one testicle in 1,000 recruits, and with one case of non-descent of both testicles in 10,000 recruits. There are three preparations, showing the non-descent of these organs, in the Museum of Guy's Hospital; one of them was taken from a gentleman who shot himself from despondency at his supposed defective condition. Hunter thought that the undescended testicles were always imperfect both in their structure and functions, and that crypsorchides were invariably impotent (sterile). Some recent researches have tended to support the views of Hunter. In January 1860, Mr. Partridge communicated to the Pathological Society the case of a man of 25, in whom both testicles were found in the abdomen. Several specimens of the secretion were examined, and no spermatozoa were detected. Another case was examined with a like result ('Lancet,' January 1860, p. 66), and a third by Mr. Curling ('Med. Times and Gaz.' February 23, 1861). The conclusion to which these observations have led is, that, although in cases of non-descent there may be a capacity of sexual intercourse, it would not be prolific: the person will be sterile. According to this view, malposition of the organs must be taken as synonymous with defective condition: as a result of this malposition they are not capable of secreting prolific spermatic fluid, and the person is as sterile as if he had no testicles. The cases of monorchides reported by Mr. Curling (Op. cit. p. 8) to some extent support this theory, since spermatozoa were found only in the fluid of that testicle which occupied its usual position in the scrotum. He has also collected from various sources seven cases of crypsorchides, in which both testicles were either in the abdomen or in the inguinal canals; the fluid contained in them was destitute of spermatozoa, and, although impotency did not exist, these persons either were or were presumed to be unprolific. M. Godard has noticed that horses whose testicles are retained in the abdomen, although capable of intercourse, are sterile.

On the other side of the question there are, however, facts which are wholly

inconsistent with this theory. Many years since I published the account of two cases of crypsorchides, communicated to me by my friend and colleague Mr. Cock. The testicles in these men had not descended, but their virile functions were undisputed. One of them, before he had reached the age of 30 years, had been twice married, and had had children by each wife, besides illegitimate children which were affiliated on him during the time he lived in service. In a report of cases of hernia by the late Mr. Poland ('Guy's Hospital Reports,' 1843, 1, 163), there is the case of a man æt. 29, a crypsorchid, whose testicles had never descended. Mr. Poland states that there was not the slightest trace of scrotum, but the penis was well-developed, and there were all the other signs of virility. This man married when he was 20: he had had two children by his first wife, and at the time of his admission into the hospital had been married two years to a second wife. In January 1862 I saw, in Guy's Hospital, a patient under Mr. Durham: the testicles of this man had not descended—they were lodged in the inguinal canals. The man was 32 years of age, well developed, with every appearance of virility about him, and with the same masculine development which is seen in other men of the same age. This man was married, and had had two children by his wife. Since puberty he had always been competent, and he ridiculed the idea that his testicles were inefficient. Another case is referred to by Mr. Curling (Op. cit. p. 9), which occurred to Dr. Debrou, of Orleans. The testicles were in the inguinal canals; there was no scrotum. The man had been married, and had had one son by his wife.

By these facts, therefore, it is incontestably established that crypsorchides are not necessarily sterile, and that no absolute rule can be laid down respecting the existence or non-existence of prolific power under such circumstances. It has been objected that, in the above instances of prolific power, spermatozoa have not been proved to exist in the spermatic secretions of the individuals, and that the evidence is therefore incomplete. But these bodies have not been proved to be absent, and most persons will agree that there is no better evidence of prolific power than the procreation of children, whether spermatozoa are or are not detected—a matter which will sometimes depend on the accuracy of observation or experience of the examiners or, it may be, on a morbid state of the secretion. If none were found under these circumstances, it would only prove that our present theories of generation would require to be modified. In one case Casper found spermatozoa in the fluid emitted by a crypsorchid ('Ger. Med.' vol. 2, p. 187). One affirmative instance is sufficient for all the purposes of law, to overthrow ninety-nine negative instances; and, as a physiological fact, it is obvious that the organs which have not descended, are not always defective in structure or function. The cases hitherto observed are so nearly balanced that it is difficult to say whether it is the rule or the exception that crypsorchides should be found prolific: the facts above mentioned clearly prove that there is no reasonable ground for pronouncing them to be absolutely sterile or unprolific, merely because their testicles are not in the scrotum. If, with a non-descent of these organs, there should be a non-development of the other external organs, and this is accompanied by a total want of the characters of virility, then the person may be impotent or sterile. The testicles may, in such a case, be either congenitally absent or physically imperfect—a fact only ascertainable by an examination of the body after death. On the other hand, in cases in which there are no external marks of effeminacy, or other grounds for suspecting a want of procreative power, and the person is capable of sexual intercourse, this imperfection does not offer any bar to marriage, nor is it a sufficient ground for divorce. It would not justify a medical man in denying the paternity of a child on a question of *affiliation, bastardy, or inheritance*; and so long as the power of sexual inter-

course existed, it would not justify him in pronouncing the person to be incurably sterile. The capacity for sexual intercourse is the fact to which the English law commonly looks on these occasions. If this exists, then it will hardly entertain the question—surrounded as it may be with conflicting medical opinions,—whether, from the mere retention of the organs in the abdomen, the fluid secreted is or is not, microscopically speaking, of a prolific nature? Women may be sterile from a variety of causes affecting the internal organs, only ascertainable after death. The ovaries may be so diseased that no prolific intercourse can take place, although there may be no physical incapacity. In a case related at p. 310, the incapability of *conception* on the part of a woman was held by Dr. Lushington not to be a sufficient ground for pronouncing a sentence of nullity of marriage; and doubtless the want of power on the part of a male to effect impregnation, unless it depended on some visible physical defect, would be viewed in a similar light. Such persons are not impotent but sterile, and sterility in an irremediable form is rather assumed than demonstrated to exist.

The presence of what have been called supernumerary testicles does not affect the virile powers of the man. These have in general been found, by dissection, to be tumours connected with the healthy glands, and not at all adding to or interfering with their functions. Even the presence of two or three penes, according to Mende, is no bar to the exercise of sexual power, provided only one possesses the normal characters of the male organ. This author refers to cases of duplex organs. ('Ausführl. Handb. d. ger. Med.' 4, 337.) One of these sexual monsters, a youth with two distinct penes, was exhibited in London some years since. He could exercise his functions with either organ, but there was only one testicle to each penes.

In some instances there is an arrest of development in the external organs: and with this there is generally an absence of sexual desire. Mr. Farr met with a case in a man aged 42, in whom the sexual organs remained undeveloped and in an infantile state. There was some difficulty in finding the testicles, in consequence of their small size. On examining the contents of the glands microscopically, no spermatozoa were detected. This person's voice was effeminate, and he was devoid of hair on the chin and pubes. ('Med. Gaz.' 40, 857.) It is not, however, always to be inferred that a male with imperfectly developed organs is incurably impotent. The following case is quoted by Mr. Curling:—A gentleman, aged 26, consulted Mr. Wilson on the propriety of his entering into marriage. His penis and testicles but little exceeded in size those of a youth of eight years of age, and he had never, until this acquaintance with his intended wife, felt the desire of sexual intercourse. He married, and became the father of a family; and at the age of 28 the organs had attained the full development of those of an adult. (Op. cit. p. 95.) Under wasting of the testicle, or when the gland is extensively diseased, and the sexual desire disappears, there can be no doubt of impotency. The functions of these organs are not, however, readily impaired by local disease. The spermatic secretion is still properly formed, even when only a small part of the gland remains healthy,—a fact proved by a microscopical examination. Certain diseases of the appendages of the testes may, however, render a person sterile. The spermatic secretion is commonly suspended in most severe diseases which affect the body. One of the most frequent causes of impotency (sterility) in the adult, when the organs are apparently sound, is spermatorrhœa, arising from abuse or excess. This, however, is remediable to a greater or less extent by treatment. (See Curling, 'Diseases of the Testis,' 2nd ed. p. 386; also 'Med. Times and Gazette,' Jan. 23, 1858, p. 95.)

Epispadia and Hypospadia.—On the absence of the penis, as well as on its defective organization, as causes of incapacity, some remarks have been

already made in the preceding chapter. Sometimes the defect is merely connected with the urethra. Thus, the orifice may be on the dorsum penis, and in other cases underneath the organ, so that the urethra may terminate at a variable distance from the glans penis. Those labouring under the former defect are said to have *epispadia*, and under the latter *hypospadia* (from ὑπὸ, under, and σπάω, I draw). Several cases of these kinds of malformation have been described by Mr. Bryant. ('Guy's Hosp. Rep.' 1867, p. 420.) No two cases are precisely alike. The power to have fruitful intercourse will in either case depend on the situation of the urethral aperture. Rüttel knew an instance of a hypospadian having several children. (Henke's 'Zeitschrift,' 1844, p. 258.) Some doubt has existed respecting the virile powers of those who are affected with hypospadia. In September 1850 a lad, aged 17, was summoned before the magistrates of Kidderminster on a charge of affiliation, in reference to the pregnancy of a girl aged 18. The defence was that he could not be the father of a child, because there was such a malformation of the penis as to prevent prolific intercourse. On examination, the urethra was found to terminate on the under-surface of the penis, about an inch and a half from the glans, by a small elliptical orifice, which allowed the urine to pass, but with some difficulty. One medical witness gave it as his opinion that it was not impossible, but highly improbable, that the defendant should possess procreative power; another freely admitted the boy's capacity, and the case was decided against the defendant. He was pronounced to be the father. ('Med. Times,' Sept. 21, 1850, p. 321.) This decision was physiologically correct. When the urine can pass, the seminal fluid can pass; and the only question is, whether the intromission can be such as that the misplaced orifice should come in contact with any part of the vagina. This must depend on the situation of the orifice. [Cases illustrative of the fully prolific powers of hypospadians will be found in the 'Med. Times,' Sept. 14, 1850, p. 292; and Oct. 12, 1850, p. 392. An instance of the virility of a hypospadian has also been published by Mr. Noble, of Manchester, in the 'Assoc. Med. Jour.,' March 1853, p. 236.] Similar remarks apply to epispadians. These malformations are sometimes remediable by operation; but whether remediable or not, they are not, under any circumstances, to be regarded as absolute causes of impotency.

A case, apparently involving a question of this kind, was tried at the Manchester Lent Assizes, 1867 (*Reg.* v. *Milner*). A woman was indicted for perjury. She swore that one Shepherd was the father of her child in an affiliation case. A few months before the child was born, Shepherd had married another woman. Shepherd, the prosecutor, swore that he never had had connexion with the woman, alleging that he was impotent and incapable. Three surgeons swore, from an examination of Shepherd, that it was impossible he could be the father of the prisoner's child. Shepherd's wife also swore that her marriage had never been consummated. Prior to her marriage she had had a child. Shepherd was asked how, under these circumstances, he came to enter the marriage state. He replied that they did not desire any family, and they had agreed to live together. Two medical men were then called for the defence, and they said, although Shepherd was somewhat different from other men, it was more than probable that he might have a family. Mr. Justice Shee stopped the case, and said that, as the medical evidence was very conflicting, it was impossible to convict the woman.

The incapacity for intercourse in either sex may arise from *extensive disease* affecting parts in and around the organs of generation. The medical opinion here must be regulated entirely by the circumstances attending each case.

Impotency from corporeal disease.—In the preceding paragraphs the influence of local disease of the sexual organs in affecting virility has been considered. But there is a class of cases which may come before a practitioner

in which, with well-formed and apparently healthy organs in the male, there will be a state of impotency. Sometimes this may depend on natural weakness of constitution, or on a want of proper development of the muscular and nervous systems: at other times it may be due to certain diseases producing cerebral exhaustion ('Lancet,' 1873, 1, p. 517), and it is then of a temporary nature—persisting while the body is still suffering from the disease, and disappearing on recovery. As a converse fact, there are certain diseases which appear to bring out the dormant virile powers of persons, or to excite to a higher degree of intensity those which already exist. Thus it is said that while during an attack of fever there is complete impotency, in convalescence from fever there is, occasionally, extraordinary salaciousness; but this statement requires confirmation. Again, there are some diseases which neither interrupt nor affect the exercise of the sexual functions.

As a general rule, diseases which do not affect the brain and spinal marrow, and which are not attended with great debility, do not prevent fruitful intercourse. On the other hand, all diseases which are attended or followed by great debility suspend or destroy sexual power. Among these may be mentioned water in the chest, general dropsy, especially if attended with effusion in the sexual organs,—nervous and malignant fevers which affect the brain,—apoplexy, palsy, and other diseases which directly attack the brain or spinal marrow. These last-mentioned diseases probably act by suspending the secretion or altering the nature of the prolific fluid, as well as by preventing that erection of the male organ without which intercourse cannot take place. The sexual function is so intimately allied to bodily vigour and nervous energy, that the integrity of the one may be pronounced to be essential to the integrity of the other. Habits of drunkenness and the abuse of alcoholic liquids or narcotics, such as opium and tobacco, may give rise to impotency by the injury done to the brain and nervous system. (The reader will find this subject fully discussed by Mende, 'Ausführl. Handb. der ger. Med.,' vol. 4, p. 349.)

These cases of alleged impotency from corporeal disease, when they require to be elucidated by medical evidence, create great difficulty. In *Legge v. Edmunds*, which came before the Vice-Chancellor's Court in 1854–5, a question arose respecting the legitimacy of a child conceived during wedlock but born four months after the death of the husband. In presumption of law, the child was legitimate, because husband and wife were at the time living together, and conception and birth were, as to date, in accordance with the ordinary rules. Two months preceding the supposed date of conception, the husband, a man of intemperate habits, was seized with paralysis (*hemiplegia*) accompanied by coma, and he lost the use of the right side of his body. In about a month he partially recovered, but the paralysis never left him. A month later he was attacked with general dropsy and disease of the liver; and he died five months after the supposed date of conception, and four months before the birth of the child. A year after the death of the husband, the widow married the defendant, the alleged adulterer, and had by him four children; but for eight years preceding the death of her first husband this woman had borne no child, and it was only when her intimacy with the alleged adulterer commenced, and during her husband's illness, that she became pregnant. The question submitted to Dr. Carpenter and myself on this state of facts was—Was it possible or probable that the husband could have begotten the child in the diseased condition in which he was represented to have been at the date of conception? The opinion given was that it was possible, because there was opportunity of access; and sexual power, if lost by the attack of paralysis, might have returned at a time corresponding to this date; but we considered it to be in the highest degree improbable. It was alleged

that diseases of this kind tended to suspend sexual power, that in this particular instance the effect would be aggravated by the intemperate habits of the husband, and the general exhaustion and debility under which he was proved to be labouring. Further, the non-procreation of children during the eight years that he was married and in constant habits of intercourse with his wife, was clearly not owing to sterility or incapacity on her part, because she had borne four children after her marriage with the defendant: it could therefore, in our opinion, be assigned only to impotency or incapacity in her first husband.

The general conclusion which we drew from the facts laid before us was, that the husband at the time was impotent, and incapable of begetting a child. Evidence to this effect was given by us in the inquiry subsequently directed by the Vice-Chancellor. At the same time, we did not feel justified in asserting that prolific intercourse on the part of the husband was actually impossible. Dr. Guy and Dr. Semple gave evidence on the part of the defendants, to the effect that there was no proof of impotency in the husband, and that a man labouring under such an illness as that from which he was stated to have suffered, would still be physically capable of procreating children. The evidence regarding the precise bodily condition of the husband about the date of conception was conflicting: and on this ground probably, as well as in conformity with the legal rule that a child begotten in wedlock is to be regarded as the child of the husband—unless an *impossibility* of access or intercourse is proved—the Vice-Chancellor decided in favour of the defendants, that the child was the child of the husband, and was entitled to the estate which the plaintiffs, the heirs of the husband, sought to recover from the defendant and the widow who had married him. There was no evidence from parental likeness, for the child through whom the claim arose had died some time before proceedings were taken. Without disputing the equity of this decision, it involves this assumption—that during eight years of a dissipated life, and before being attacked by paralysis (hemiplegia), the husband did not possess procreative power, and that this only manifested itself suddenly, after a severe attack of the disease from which he never entirely recovered. The legal presumption of legitimacy by wedlock and possible access was, however, too strong to be rebutted by medical opinions.

Mr. Curling observes that diseases and injuries of the spinal cord producing paraplegia have no direct effect on the testicles, but destroy the power to copulate. (Op. cit. p. 371.) When there is a wasting of the testicles, as a result of general paralysis of long standing, there can be no doubt of impotency; but Mr. Curling quotes a case from a foreign writer, in which, under paralysis (paraplegia) of some years' duration, a man retained sufficient sexual power to have prolific intercourse. When the paralytic person is advanced in age, it is highly probable that he is impotent. In December 1857 a case was referred to me, in a question of bastardy, for my opinion on the capacity for intercourse under the following circumstances. A woman required an order of affiliation on the putative father of her bastard child. She was a widow, and the illicit connexion took place about two months before her husband's death. The husband was at the time 84 years of age; he was bedridden, and for many weeks before his death he could not move in his bed, and was unable to pass his urine without assistance. The medical opinion of those who examined him was that he was impotent from physical infirmity, and in this opinion I concurred; stating, however, that unless the male organs were diseased or destroyed, it could not be said that intercourse was impossible. It was, however, wholly improbable that the husband could have been the father of the child.

Some diseases appear to have a specific influence on the development of the sexual organs: and although not influencing the nervous system—not affecting

the sexual organs directly, nor leaving any trace of constitutional disturbance —they lead to an arrest of sexual development, and therefore to impotency and sterility. One disease has been especially noticed as possessing this influence—namely, *cynanche parotidea*, or mumps. Sir Astley Cooper was accustomed to state in his lectures that on the subsidence of this disease, when it attacked adolescent males and females, the testicles in the male and the breasts in the female became occasionally inflamed. The organs shrank, and slowly withered; their development was arrested, and in the male incurable impotency was the result. Dr. Krugelstein refers to a case in which a strong and healthy man was rendered incurably impotent after an attack of this disease. (Henke's 'Zeitschrift,' 1842, vol. 2, p. 354: see also Curling, op. cit., p. 59.) On the withering of the testicles from disease, see a paper by Dr. Albers of Bonn, Casper's 'Wochenschrift,' Sept. 1851, pp. 568, 577.

Blows on the head or spine, by affecting the brain and spinal marrow, may produce impotency. Several cases of impotency from this cause are related by Curling (op. cit. p. 362). It has been noticed that blows on the under and back part of the head, in the region of the cerebellum, have been followed by loss of sexual power on recovery. Sometimes this is temporary; but at other times, when there is wasting of the testicles, it is permanent and irremediable.

Of *moral* causes it is unnecessary to speak. The sexual desire, like other animal passions, is subject to great variation; and there are instances on record in which men, otherwise healthy-looking and healthily formed, have experienced no desires of this kind. They are in a state of natural impotency—a condition which the Canon Law designates as frigidity of constitution. This is not to be discovered by examination, but rather from their own admission. Under this head we may class hypochondriacal affections. [For a valuable scientific summary of the causes and treatment of impotency, I must refer the reader to the work of Mr. Curling, 'Diseases of the Testis,' 2nd ed., p. 359, 1856.]

STERILITY.

CHAPTER 72.

STERILITY—CAUSES—PROCREATIVE POWER IN THE FEMALE—PUBERTY—EARLIEST AND LATEST AGES FOR CHILD-BEARING—FEMALE PRECOCITY—AGE FOR CESSATION OF THE MENSES—LEGAL RELATIONS OF IMPOTENCY AND STERILITY—LEGITIMACY AND DIVORCE.

Definition.—Sterility is usually defined to be 'the inability to procreate, or a want of aptitude in the female for impregnation.' It is not usual to speak of sterility in the male, although there may be procreative incapacity; because the defective condition in this sex, from whatever cause, is, in a legal view, included under the term 'impotency' (see p. 288, *ante*). In the strictness of language, a male who has been castrated is sterile; but it is commonly said that he is impotent. Many apparently well-formed males may be sterile without being impotent, *i.e.* they may have intercourse without procreating; for the power of copulating must not be confounded with that of procreation. Mr. Curling has pointed out that various causes may render a man sterile, although he may retain a power of sexual intercourse, and thus cannot be regarded as impotent in a legal sense. ('Diseases of the Testis,

ed. 2, p. 216.) Some crypsorchides may be sterile, or deficient in procreating power, while at the same time impotency or incapacity of intercourse may not exist. In reference to women, sterility implies that condition in which there is an 'inability to conceive.' This appears to be the true meaning of the term, and the sense in which it is used not only by the best writers but in common phraseology.

Age at which menstruation commences. Procreative power in the female.—In the *female*, the procreative power is supposed not to exist until after the commencement of menstruation, and to cease upon the cessation of this periodical secretion. The menstrual function is commonly established in females in this climate between the ages of *fourteen* and *sixteen*; but it may occur much earlier—indeed, in some rare instances, a discharge resembling the menstrual has been known to occur in mere infants. In other cases its appearance has been protracted to a much later period. According to Dr. Rüttel, the menstrual function appears in the smallest number of females at 12, 13, and 14, and in the largest number at 16, 17, and 18 years. In some it is only first established at from 19 to 21 years; and he states that at this age he has often found the uterus small and quite undeveloped. According to Mr. Hogg ('Med. Times and Gaz.' 1871, 2, 555), out of 2,000 inquiries, personally made, the earliest age for the commencement of menstruation in one case only was 9, and the latest 22. Among this number there were at 12 years of age 253; at 13, 437; at 14, 502, and at 15, 270. Other statistics, collected by Mr. Walter Rigden, and communicated to the Obstetrical Society by Dr. G. Hewitt, show that among 2,696 women who applied at University College Hospital to be attended in their confinement, menstruation commenced in the greatest number (560) at 14 years of age; in the smallest number (3) at 9 years, and in 2 at 26 years. From these cases it appeared most frequently at 14 years of age, then at 15, 16, 13, 17, 12, 18, 19, 11, 20, and 10. ('Obstet. Trans.' 1870, 11, 243.) The earliest and latest period in a large number of cases were respectively 9 and 23 years. ('Lancet,' Nov. 30, 1844, p. 283.) Perhaps, in this country, the most frequent age for the commencement of menstruation may be taken at 15 years. It is liable to be accelerated in its appearance by certain moral and physical conditions under which a girl may be placed. According to Dr. Chevers, women in India begin to menstruate after the twelfth year or at the beginning of the thirteenth, and the function continues until the fortieth or even the forty-fifth year. Menstruation at ten years is very uncommon, and probably does not occur in more than one or two instances out of a hundred females. It is equally rare that it should be delayed beyond the thirteenth year. ('Medical Jurisprudence for India,' 1856, p. 461.) The most common intervals for the appearance of this function are twenty-eight and twenty-one days. It is sometimes late in life before it appears. Dr. Camps found that it had not appeared in a married woman, æt. 30, who had borne no children. ('Med. Gaz.' vol. 32, p. 409.) Another case is mentioned in the same volume where it appeared for the first time at the age of 47 (p. 567). So soon as this function commences, a woman may be considered to have acquired procreative power; but a female may conceive before the function has commenced, during the time of its occurrence, or after it has ceased. From facts elsewhere stated (*ante*, p. 243) there is some reason to believe that the period which immediately precedes or follows the discharge is favourable to conception: although the experience of most accoucheurs has now proved that impregnation may take place at any time between one menstruation and another.

It is important to remember that these changes in the uterus may produce remarkable effects by sympathy with the brain and nervous system. At or *about the time of* puberty, especially if any cause of obstruction exists, girls

become irritable, easily excited, and they have been known to perpetrate, without motive, crimes of great enormity, such as murder and arson. A propensity to steal is also stated sometimes to manifest itself. (See *post*, KLEPTOMANIA.) It has been remarked that acts of arson and murder have been frequently committed by girls at this period of life without any apparent motive or for the most trivial reasons, and the crime has spread by imitation. The case of *Brixey*, tried for the murder of an infant, and acquitted on the ground of insanity, will serve as an illustration of the morbid effect produced on the brain by disordered menstruation. (See *post*, INSANITY.) Other causes have been already referred to in this work in which crimes of the greatest magnitude have been traced to girls of this age, without any apparent reason for imputing actual insanity. The only suggestion that could be advanced was the atrocity of the act, without any of the ordinary motives which actuate criminals, and the acts of murder were perpetrated on helpless children incapable of giving offence. In the case of *Vamplew* (vol. 1, p. 409), Lincoln Aut. Ass., 1862, it was proved that a girl under *thirteen years* of age, acting as nurse in a family, had destroyed with strychnia an infant entrusted to her care. It transpired that in two other families she had previously destroyed with poison infants placed under her charge. The case of *Constance Kent*, a girl between *fifteen* and sixteen years of age, furnishes another illustration. She was convicted on her own confession of the murder of her infant step-brother (vol. 1, p. 518) under circumstances showing great atrocity and cunning, and for which no motive could be suggested. Lastly, there is the case of the girl *Norman* (p. 24 *ante*), aged *fifteen* years, convicted of an attempt to murder, by suffocation, a child placed under her care as nurse. It came out that four other children to whom she had been nurse had died under her hands from suffocation. There was no evidence of intellectual insanity in any of these cases, nor was there anything to show that the uterine sympathy, if it existed, was beyond the power of control. They were all convicted. At this period of life the state of the mind should be closely watched, and any causes of irritation or violent excitement removed. Irregularity, difficulty, or suppression of the menstrual secretion may give rise to temporary insanity, indicated by taciturnity, melancholia, capricious temper, and other symptoms. Puberty in the *male* may be attended with similar morbid propensities, but these are not so commonly witnessed as in the female sex.

Pregnancy before menstruation.—The occurrence of menstruation is not indispensable to pregnancy: many cases are on record in which women who had never menstruated have conceived and borne children. One case is reported in which a woman, aged 25, became pregnant and bore a child, and menstruation was only regularly established afterwards. ('Lancet,' February 1842.) Dr. Murphy mentions another instance of pregnancy previous to menstruation in a woman aged 23. ('Obstetric Reports,' 1844, p. 7.) Numerous cases of conception without previous menstruation are quoted by Capuron ('Méd. Lég. des Acc.' p. 96); and no fewer than nine instances of pregnancy before menstruation have been collected by Mr. Whitehead. The women were all in excellent health during the whole time, and one did not menstruate until more than two years after the marriage had been consummated. ('On Abortion,' p. 223; see also Orfila, 'Méd. Lég.' 1848, 1, 257.) Another case will be found reported in the 'Medical Gazette' (vol. 44, p. 969). Dr. W. Taylor met with an instance in which a girl, aged 13, bore a child before menstruation had appeared. ('Med. Times and Gazette,' March 12, 1853, p. 277; see also, for remarks on this subject, 'Edin. Monthly Jour.' July 1850, p. 73.) The late Dr. Reid has stated that a patient of his, bore a child at the age of 17 without having previously menstruated; and he collected from various authorities a number of cases of pregnancy occurring in women who had

not menstruated. ('Lancet,' Sept. 3, 1853, p. 296.) Mr. Pridie met with the case of a girl, æt. 15, who was then for the first time confined and had never menstruated. In some cases it has been noticed that menstruation has ceased after marriage or taken place only at rare intervals without interfering with impregnation. Dr. J. Young has added to the number of these cases. ('Amer. Jour. Med. Sci.,' Oct. 1870, p. 568.) 1. A woman, married on the 10th Sept. 1859, menstruated in October thereafter, but not again until June 1870, and she had had in the interval six healthy living children. 2. A woman married in January 1856 and only menstruated three times up to June 1870. She is the mother of nine children, seven of whom are alive. In these cases the women had menstruated regularly until they were married.

According to Bischoff, the uterine discharge of blood in menstruation is only a symptomatic although a usual appearance. But it may be absent, while the ovarian changes go on in the usual way: hence a non-menstruating woman may conceive. At the menstrual period the uterus undergoes certain changes; the mucous membrane is swollen, and the uterine glands are strongly developed: hence the expelled ovum finds a ready spot of attachment when impregnated, and an absence of this swollen condition of the mucous membrane at other times may be one cause of sterility. From an inspection of the generative organs in the human female, in thirteen cases, during or shortly after menstruation, he inferred that the change in the uterine mucous membrane was synchronous with the commencement of menstruation: this condition was observed to remain for so long a period as eighteen days after the function had ceased. The true function of menstruation appears to be the ripening and separation of the ovum. ('Medical Times and Gazette,' April 8, 1854, p. 354.)

Premature puberty.—Instances of premature puberty in the female are numerous: they are far more common than in the male sex. Mr. Whitmore met with the case of a female child who, from a *few days* after her birth, menstruated regularly, at periods of three weeks and two or three days, until she had attained the age of 4 years, when she died. On inspection after death she appeared like a much older girl. The breasts were unusually large, and the female organs and lower limbs were considerably developed. ('North. Jour. Med.' July 1845, p. 70.) Another case of a child aged 3 years is reported in the 'Lancet' (January 29, 1848, p. 137). The breasts were as healthily developed as in an adult of 20 years, and the sexual organs were also as much developed as in a girl at the age of puberty. It was observed that this child, who had been regularly menstruating for twelve months, had the appearance of a little old woman. (For other cases of menstruation at 5 years, see 'Med. Gaz.' vol. 25, p. 548; at 3 years, vol. 47, p. 244; and at 3½ years, 'Med. Times and Gazette,' July 24, 1858.) M. Flugel reports the case of a female child who died at the age of *five* years and six months, and who had attained the height of five feet and a proportionate development of the body throughout. When six months old she had cut all the incisor teeth, and when nine months, all the molars. When she had reached the eighteenth month the menses first made their appearance, and from that time occurred with great regularity. The hair of the head was long, the breasts prominent, the external genitals were well-developed but without hair. The pelvis was capacious. The intellectual powers were not more advanced than usual. ('Amer. Jour. Med. Sci.' July 1872, p. 245.) In these instances there is great reason to believe that procreative powers are early developed: but it is not common to hear of such young females becoming impregnated. A case is mentioned by Dr. Beck, in which a girl menstruated at one year; she became pregnant, and was delivered of a child when little more than *ten years old.* Dr. Walker met with a case in which the menstrual function was estab-

lished at the age of 11½ years, and the patient was delivered of a living child when only 12 years and 8 months old. ('Amer. Jour. Med. Sci.' October 1846, p. 547.) In another, observed by Rüttel, already referred to, a female of the age of *fourteen* became pregnant by a boy of the same age. He also quotes three other cases, where one girl of the age of *nine*, and two of the age of *thirteen*, became pregnant (loc. cit.). The first of these three cases represents the earliest age for pregnancy yet assigned by any author. Dr. Wilson met with an instance in which a girl at the age of 13 years and 6 months gave birth to a full-grown child; conception must have taken place when she was 12 years and 9 months old. ('Edin. Med. Jour.' October 1861. See also Casper's 'Vierteljahrsschrift,' January 1863, p. 180.) Mr. Robertson mentions the case of a factory-girl who became pregnant in the eleventh year of her age. A case came before the magistrate at Wandsworth in Sept. 1871, in which a girl under 13 was found to be pregnant. It appeared from the evidence that impregnation must have taken place when the girl was 12 years and three months old.

I am indebted to Sir Eardley Wilmot for the particulars of a case (*Reg. v. Chattaway*) which was the subject of a trial on the Midland Circuit. At the Coventry Summer Assizes, in 1848, he conducted a prosecution against a man, æt. 45, for a misdemeanor in having had carnal knowledge of a girl named *Sprason*, then between the ages of ten and twelve years. When intercourse was first had, the girl was *eleven years and eight months old*; it was repeated several times subsequently; and when the prosecutrix gave her evidence in Court, it appeared from the statement of the mother that she was in the last month of her pregnancy: she was then not quite twelve years and six months old. Sir E. Wilmot ascertained by inquiry that menstruation had commenced in this girl at the age of *ten years and two months*, and had continued regularly up to December 1847, which was about the time when she had first had intercourse with the prisoner. It appeared that she was a factory-girl; and to the heat, confinement, and association with males, to which girls are subjected in this employment, may be referred the early commencement of puberty. When menstruation has thus commenced, conception may always be the result of sexual intercourse. The prisoner was convicted, and sentenced to two years' imprisonment with hard labour. The reader will find some additional particulars, in reference to this case, by Mr. Smith, of Coventry. ('Med. Gaz.' vol. 42, page 751.)

Age at which menstruation ceases. Menstrual climacteric.—The average age at which this function ceases in women is usually from 40 to 50 years: but as it may commence early, so it may continue late in life. In one case it has been known to cease at the age of 23, and in other instances it has continued to the age of 66 and even of 75 years. (Whitehead, op. cit. p. 145 *et seq.*) Out of many cases collected by Mr. Hogg, the earliest age at which menstruation ceased was 23, the initial period having been 16. In one woman it ceased at 34 and in two at 53, but in the greatest number (nine) it ceased at 47. ('Med. Times and Gaz.' 1871, 2, 555.) Dr. Royle describes three cases, in two of which menstruation continued up to the age of 67. ('Med. Times and Gaz.' Nov. 1860.) Mr. Thomas met with a case in which a woman had ceased to menstruate at the age of 45, but the discharge suddenly reappeared after an attack of illness when she had reached the age of 69. The discharge appeared several times, but not with monthly periodicity. It seems that her mother and sister had also menstruated at the ages of 69 and 60. ('Med. Times and Gaz.' Aug. 7, 1852, p. 148.) In a case which occurred to Capuron, it continued beyond the age of 60 (op. cit. p. 98); but a more remarkable case, both of late menstruation and late pregnancy, is quoted by Orfila from Bernstein. A woman, in whom the function appeared at 20, menstruated until her

ninety-ninth year. Her first child was born when she was 47, and her seventh and last when she was 60. ('Méd. Lég.' 4ème éd. 1848, 1, 257; see also Briand, 'Man. Complet de Méd. Lég.' 1846, p. 137.) Other cases are recorded on good authority. Dr. Whitehead communicated to the 'Lancet,' 1866, the following facts. He was called to a lady æt. 77, suffering from uterine hæmorrhage. Upon inquiry, he found that she had menstruated monthly up to the time at which he saw her. The discharge lasted from four to five days, and had then left her; but on this occasion it had been very profuse. She was restored by the usual remedies. Other cases are reported in the 'Amer. Jour. of Med. Sciences' (Jan. 1845, p. 107). In one of these, a nun, the menses ceased at 52: at the age of 62 they reappeared, and so continued regularly, until she was last seen at the age of 73. In another instance, a nun aged 90 had regularly menstruated from 15 to 52. The menses then ceased, but re-appeared at the age of 60, without pain, and occurred regularly every month since that date. Her health has been good throughout.

From these facts, it is clear that it is impossible to fix the age of a woman by the period at which this 'change of life' occurs. At the best, it can only be an average of a certain number of instances. This question arose in the case of *Clark* v. *Tatom* (Kingston Lent Assizes, 1848), in reference to the identity of a woman, through whom property was claimed by the husband, who was the plaintiff in the action. The marriage had taken place in 1794—the parties separated in 1809; and the plaintiff's wife, as it was alleged, died in 1843, when, by direction of the defendant, the age of 55 was put upon the lid of her coffin. A medical gentleman, who attended her in 1841, deposed that, from being then in her menstrual climacteric, he should consider her not to have been more than 50 at that time. He stated that the general period for the cessation of menstruation was 44; it was rarely protracted to the age of 50. On this assumption, it was impossible that the deceased could have been the plaintiff's wife, because at the time of the alleged marriage she would have been only *three years old!* On the part of the plaintiff, direct evidence was given to show that the deceased woman was his wife; and it therefore remains to be considered whether the adverse medical opinion is or is not consistent with medical experience. It is obvious, from the cases above quoted, that menstruation may continue to 66 or 70 years of age, and that this may have been an exceptional instance. The plaintiff had a clear right to this medical presumption in his favour; and, admitting that his wife was seventeen at her marriage, she would have been menstruating in her sixty-sixth year. Hence it is evident that the medical facts of the case were consistent with the evidence adduced on the part of the plaintiff. At the trial those well-known exceptional cases of menstruation beyond the fiftieth year were not even referred to: nevertheless the jury returned a verdict in favour of the plaintiff.

Is it possible for a woman to become pregnant after menstruation has ceased?—It is commonly asserted and believed that, after the cessation of menstruation, a woman is sterile. This is doubtless the general rule; but in a medico-legal view it is necessary to take notice of the exceptions. Mr. Pearson, of Staleybridge, communicated to the 'Lancet,' some years ago, the case of a lady, aged 44, who up to September 1836 had given birth to nine children. After this the menses appeared only slightly at the regular periods until July 1838, when they entirely ceased. Owing to this, she supposed that she was not liable to become pregnant; but on the 31st December 1839—therefore eighteen months after the entire cessation of the menses—she was delivered of her tenth child. Hence conception must have taken place at from eight to nine months after the final cessation of the discharge.

Latest age for pregnancy. Fecundity.—Dr. Duncan concludes, from his

researches, that the great majority of the population is recruited from women under 30, but that the mass of women of from 30 to 40 years contribute to the general fertility a larger proportional share than the mass of women from 20 to 30. There is a gradually increasing fecundity as age advances up to about 25, and it then diminishes. ('Edin. Monthly Journal,' Nov. 1864, p. 450.) The age at which women cease to bear children is usually from 40 to 50 years; but as they may menstruate, so they may conceive, beyond the last of these periods. Besides, the facts above-mentioned show that the continuance of menstruation is not absolutely necessary for conception. Numerous instances are on record of females advanced in life bearing children. A case is reported in which a well-formed woman, who had been married nineteen years, did not bear a child until she had reached the age of *fifty*. (Schmidt's 'Jahrbücher d. Med.' 1838, S. 65; Henke's 'Zeitschrift,' 1844, S. 251.) In this case it is stated that menstruation had ceased two years before conception. Rüttel observed in twelve women that they bore their last children at ages varying from 45 to 50 years. Ottinger met with an instance of a woman bearing a child at 50; Cederschjald with another, where the woman was *fifty-three*, and menstruation still continued. Haller records two cases in which women at *sixty-three* and *seventy* respectively bore children. (Briand, 'Man. Complet de Méd. Lég.' p. 137.) Nevermann has drawn up a table in reference to the late ages of life in which women have borne children. Out of 1,000 cases in 10,000 births, he found that 436 children were born by females at the ages respectively—

Of 41 years	101	Of 48 years	8
42	113	49	6
43	70	50	9
44	58	52	1
45	43	53	1
46	12	54	1
47	13		

A case was communicated to the 'Medical Gazette' (vol. 39, p. 950) by Dr. Davies of Hertford, in which a woman was *fifty-five* years of age when her last child was born: she menstruated up to that time. In *Lord* v. *Colvin* (Vice-Chancellor's Court, July 1859), one of the questions raised was whether a woman æt. 52, who had been married thirty years without having children, had then passed the age of child-bearing: her issue would take the benefit of certain property under a will. It was decided that the woman had not reached an age at which it could be said to be *impossible* that she might bear children. In a return of the Registrar-General for Scotland (Feb. 1862), it is stated in the table for Glasgow, that one woman who was only 18, had had four children, one who was 22, had had seven children, and of two who were only 34, the one had had thirteen and the other fourteen children. On the other hand, two women became mothers as late in life as at 51, four at 52, and one woman was registered as having given birth to a child in the 57th year of her age.

We cannot pretend to fix the age beyond which pregnancy cannot occur. Questions of this kind have an important bearing on the subject of legitimacy; and unless the law looks to something more than ordinary professional experience in such matters, the decisions of Courts must be inequitable. The legitimacy of the claimant to the *Douglas Peerage*, about the middle of the last century (*ante*, p. 273) was contested, among other grounds, on the presumed loss of procreative power in the woman said to be the mother, who was in the fiftieth year of her age at the time of the alleged birth, and who therefore must have conceived when in her *forty-ninth year*. Lords Camden and Mansfield justly decided that this was no objection to the legitimacy of the appellant. The fallacy of trusting to a ground of this kind as evidence of

illegitimacy is proved by a reference to the numerous instances already quoted. The following cases show the more recent decisions on this subject:—*In re Winslow's Trusts*, V. C. Malins made an order for payment out of Court of two sums to two ladies respectively. One of the ladies was a widow above 55 years of age; the other, a spinster, was 53 years and 8 months. In both cases the parties were entitled absolutely, subject to the contingency of their having children. In a more recent case (*Conduitt* v. *Soane*, May 1871), V. C. Wickens declined to act upon the presumption where the lady was in her 53rd year. This was a case arising out of the will of Sir John Soane. He had directed his trustees to convey his estates to his great-grandchildren, upon whom he had also settled a large amount of personalty, which is now represented by upwards of 180,000*l.* in Court. The testator left two sons, who each left children; several of the grandchildren have died, without leaving children, the survivors being two daughters of the eldest son, who are both married but have no children, and two daughters and a son of the younger son. The married ladies were stated to be of the age of 57 and 52 years, and the case now came before the Court to obtain its sanction to a sale of a part of the real estate, on the assumption that they were beyond the age at which it could be expected that they would have children. The Vice-Chancellor declined to make any order as to the sale of the real estate, stating that he did not consider he had any jurisdiction to do so. In one instance which he had heard mentioned by the Master of the Rolls, a child had been born when the lady was six years beyond the age of the younger of these two ladies.

In *Forty* v. *Forty* (Feb. 1853) V. C. Kindersley decided that an unmarried lady, æt. 53, might be presumed to be beyond the age of child-bearing, although in this case security was required for the repayment of the money in the event of her marrying and having lawful issue. On this precedent the question may be considered as definitely settled. A woman who has passed the age of 53 is presumed in law to be past the age for child-bearing. ('Med. Times and Gaz.' 1871, 2, 114.)

A case somewhat similar to the Douglas case was the subject of a trial in France in 1754. *François Fajat* claimed an estate as heir to his mother. His claim was resisted on the ground that, according to the baptismal registry, his mother could not have been the legitimate heiress of the party through whom the claim accrued; because her alleged mother would then have been in her *fifty-eighth* year; and this, it was alleged, was beyond the age of child-bearing. Ancient records were searched, and the claim of legitimacy was admitted, because menstruation and conception had been known to occur at periods of life even later than this. (Capuron, 'Méd. Lég. des Accouch.' p. 93.) This author quotes a case in which a healthy woman menstruated until she had passed her *sixtieth year*, and her last child was born when she was *sixty years* of age (Op. cit. p. 98). Other cases of births at the respective ages of 63 and 65 are referred to, but these appear to be of a less authentic kind. The truth is, in giving a decision, the law is bound to look to the anomalies connected with the exercise of the generative function; and therefore the limited experience of a few medical witnesses, casually taken, can hardly be expected to supply satisfactory answers to questions of this kind. It establishes no presumptions respecting the presence or absence of child-bearing power at any period of life; it leaves each case to rest upon the whole of the circumstances which attend it.

Causes of sterility.—The causes of sterility in the female system are very numerous. Some of them depend upon peculiarities of constitution, the sexual organs being well formed and developed; others upon latent changes or congenital defects in the uterus and its appendages, only discoverable by an exa-

mination after death. Sterility rarely becomes a medical question in contested cases of legitimacy; for a claim on the part of a person to be the offspring of a particular woman, unless she were in collusion with the claimant, could only be made after her death; and if not disproved by medical evidence, showing that the woman could not have borne children, it would in general be easily set aside by circumstances. If the uterus, ovaries, or other parts were congenitally defective or absent, or if there were external sexual malformation, accompanied by occlusion or obliteration of the vagina, a medical witness would have no difficulty in saying that the woman must have been sterile. (See 'Medical Times and Gazette,' Jan. 23, 1858, p. 96.) A mere occlusion of the vagina, removable by operation, does not necessarily indicate sterility, for the internal organs, including the uterus, may be healthy and sound. In some instances the ovaries or the uterus may be entirely absent, or the Fallopian tubes may be obliterated,—conditions which cannot in all cases be determined during life; in other instances these organs may exist, but be defectively developed. Dr. Coley relates a case in which, in the body of a woman æt. 26, the uterus was found not larger than in an infant of one or two years of age. The mouth and neck of the uterus were perfectly defined, but were not larger than a crowquill in diameter, and one of the ovaries was imperfect. The patient had, on a few occasions, observed an appearance resembling menstruation. ('Obstet. Record,' May 1848, p. 169.) The absence of a uterus, and the absence of the function of menstruation, do not necessarily prevent the development of strong sexual propensities, although there is of course incurable sterility. (See case in 'Assoc. Med. Jour.' July 29, 1853, p. 672.) A congenital absence of the uterus and ovaries is not inconsistent with a full development of other parts. Dr. Hertz met with a case of this kind. A woman, æt. 40, had enjoyed good health up to the last year of her life. On inspection there was a complete absence of the uterus and ovaries. The vagina was normal, terminating in a cul-de-sac. The clitoris was well-developed, together with the labia and mons Veneris. The breasts were large and plump. The whole aspect attested the attributes of a well-formed woman. ('Amer. Jour.' July 1870, p. 280.) These deficiencies can therefore be only with certainty detected after death.

Some of the physical causes of sterility in a woman are removable by art. Thus, when the vagina is unnaturally closed, this condition may be often remedied by operation. An instance of this kind is related by Mr. Dumville ('Medical Gazette,' vol. 40, p. 1116), in which a woman subsequently married and bore a child. It is a fact worthy of notice, that if the internal organs are in their normal condition, the slightest aperture will suffice for impregnation. Penetration is not necessary. Women have thus been known to conceive under circumstances which appeared quite adverse to the possibility of conception; and when they had arrived at the full time, it has been found necessary to make a free incision into the parts which resisted the passage of the child's head. A remarkable case of this kind, which occurred to Dr. Simmons, is quoted in the 'Lancet' (June 19, 1847, p. 651), and there are many others of a similar nature on record. Sometimes the external passage is free, but the occlusion may be at the mouth of the uterus. This is a cause of sterility which, however, admits of remedy by operation. Cases of this kind have been successfully treated by my colleague, Dr. Oldham ('Med. Gaz.' vol. 38, p. 919), and by other obstetric practitioners.

An absence of the menstrual function (amenorrhœa) has been described as a cause of sterility; but several cases have been already mentioned, which show that women who have never menstruated, or in whom the discharge has appeared and has ceased for many years, and who are otherwise healthy and well-formed, may become impregnated. When, however, the absence

of menstruation depends on a closure of the mouth of the uterus, or other physical causes of the like nature, there will of course be sterility. If in other respects a woman is well-formed, she cannot be regarded as in a necessary incurable condition. Dr. Oldham has published two cases in which the women had each attained the age of 48 years without having menstruated. ('Med. Times and Gaz.' March 27, 1852, p. 311.) There was general good health, with a proper development of the sexual organs, in both. An inordinate periodical discharge (menorrhagia), depending on uterine disease, or disturbed and difficult menstruation (dysmenorrhœa), are frequent causes of sterility. The deranged health which accompanies these morbid conditions may be, however, itself unfavourable to conception. Difficult menstruation frequently depends on stricture of the neck of the uterus. Sterility arising from this and other diseased states of the menstrual function admits of remedial treatment. Mr. Brown has noticed that prolapsus ani, fissure of the rectum, and other diseases affecting this bowel, as well as the presence of worms therein, may be causes of temporary sterility. ('Med. Times and Gaz.' Feb. 21, 1857, p. 186.)

Dr. Hicks informs me that he has observed that women who have not menstruated before marriage have conceived immediately after their marriage. Instances are well known to occur in which a woman has not menstruated for some months previous to conception, and thus gestation has appeared to be considerably protracted. Hence a woman may conceive, although menstruation has not commenced—and although it may have commenced and afterwards ceased.

There is a popular notion that women during menstruation and lactation are sterile; but this is incorrect. (Henke's 'Zeitschrift,' 1844, p. 263.) *Leucorrhœa*, or that morbid state of the uterus and vagina which accompanies this disease, is commonly set down as a cause of sterility; but it is well known that women who have for years suffered from leucorrhœal discharge, have conceived and borne children. M. Donné thinks that this fact is explicable on chemical principles. He has observed that the spermatozoa on which fecundation depends, live and are active in the vaginal secretion on some occasions, while their movements are at other times speedily arrested. In the latter case, he has found the mucus strongly acid, and he considers that this may act noxiously and destroy them. The uterine mucus is alkaline, and in general the spermatozoa are unaffected by it: in cases, however, in which it was strongly alkaline, their motions were also destroyed. ('Cours de Microscopie,' p. 330.) Further observations are required before this theory can be admitted. The physiology of conception, as to the precise time and circumstances under which it occurs, is altogether a mystery (*ante*, p. 244). Well-organized and healthy women remain sometimes married for years without having children: when, without any apparent change of habit, they become impregnated, even after a barrenness of fifteen or twenty years. Any diseased condition of the system is unfavourable to impregnation, and *à fortiori* diseases affecting the uterus or ovaries. A common cause of sterility is inflammation of the ovaries, Fallopian tubes, &c., whereby either the Graafian follicles are destroyed, so far as their power of ovulation is concerned, or the Fallopian tubes are so injured or tied down by adhesions as to prevent them from acting as oviducts. The causes of this inflammation are numerous—as, acute suppression of the menses, gonorrhœa, miscarriage, parturition, &c. It will be proper to ascertain if at any time the sterile woman has had inflammation in the pelvic region or, as it is often called, in the 'lower bowels.' A careful examination *per vaginam* would frequently show the uterus drawn to one side, or more or less fixed. Of all diseases affecting the uterus, chronic endo-uteritis, or what may be called '*irritable uterus*,' is, in Mr. Whitehead's opinion, one of the most frequent

causes of sterility. ('On Abortion,' p. 400.) This view is also supported by Dr. W. Cumming, of Edinburgh. His observations tend to show that a diseased state of the lining-membrane of the uterus is a frequent cause of temporary sterility, but it may be removed by proper treatment. ('Lancet,' May 12, 1855, p. 480.) Change of air and climate has in some instances alone sufficed to remove sterility, probably by relieving a diseased condition of the generative organs. It has been remarked, too, of males and females, that there has often been a return of procreative power after recovery from an attack of fever. On the whole, the physical and irremediable causes of sterility in the female are not so apparent as in the male, because in the former the generative apparatus is placed internally, and slight changes in its various parts, sufficient to produce permanent sterility, cannot be determined by an examination during life.

Medico-Legal relations of the subject. Divorce.—Sexual malformation, involving impotency or sterility, constitutes one of the *canonical* impediments to marriage, and if matrimony be contracted by a party labouring under such malformation, the contract is voidable. Canonists have reckoned fourteen impediments to matrimony, enumerated in the following quaint hexameters (Poynter's 'Doctrine,' p. 84):—

'Error, conditio, votum, cognatio, crimen,
Cultûs disparitas, vis, ordo, ligamen, honestas,
Si sis affinis, si forte coire nequibis,
Si parochi et duplicis desit præsentia testis,
Ruptave sit mulier, parti nec reddita tutæ,
Hæc facienda vetant connubia, facta retractant.'

In the marriage-contract there is implied a capability of consummation, so that an incapacity in either party in this respect, constitutes a legal ground for annulling the agreement: 'Vir et mulier si se conjunxerint, si postea dixerit mulier de viro quod non possit coire cum eo, si potest (per verum indicium) probare quod verum sit, accipiat alium (Caus. 23). Quia matrimonium ordinatum fuit non solum ad evitandam fornicationem, sed etiam ad proles procreandas: si matrimonium (tale quale) fuerit inter virum et mulierem de facto solemnizatum, qui omnino inhabiles sunt, *non propter ætatem*, sed propter aliquod naturale impedimentum ad proles suscitandas, utpote propter impotentiam et frigiditatem, maleficentiam, et similia, quæ ipso jure reddant hujusmodi matrimonium nullum. Hæc impedimenta naturalia aliquando contingunt tam in muliere quam in viro et pars gravata agere potest in causâ nullitatis matrimonii.' ('Oughton,' tit. 193, sec. 17.) It will be observed from the words used in this quotation, *non propter ætatem*, that incapacity from age in either sex is not recognized as a legal ground for dissolving the marriage. The husband may be impotent or the wife sterile from old age, but they enter into the contract with a full knowledge of the ordinary effects of age. Referring to this subject in one of his judgments, Sir J. Wilde is reported to have said that although the procreation of children is one main object of marriage (*ad proles suscitandas*), yet it cannot be doubted that marriages between persons so advanced in years as certainly to defeat that object, are perfectly legal and binding. The truth is, *consensus non concubitus facit matrimonium*. The Pappian law of the reign of Tiberius forbade women under 50 to marry men of 60, and *vice versâ*; but it is now known that females are prolific beyond 50, and males beyond 60.

The impediment constituting impotency may arise either from malformation, from that which the law calls frigidity of constitution, or any physical cause of whatever nature which may render intercourse impossible. When

the physical defect is not apparent or when it is alleged to be irremediable, a continued cohabitation of three years is required before a suit can be entertained (Ayliff's 'Parergon'); but according to Oughton, 'hæc triennalis expectatio non est necessaria ubi statim possit constare de impotentiâ coeundi.' The suit for a sentence of nullity may be promoted by either party, and the medical proof required to found a sentence must be such as to satisfy the Court that the incapacity pleaded was in existence at the time of the marriage, and that it still remained without remedy. It is a matter of personal complaint only. No third party is allowed to intervene in a suit of this kind. There should be no delay in instituting the suit, and there should be proof that the impediment was not known to the complaining party at the time of the contract. A longer delay in making the complaint is allowed to a female without prejudicing her case, than to a male, by reason of the modesty of her sex.

In a suit which came before the Ecclesiastical Courts in 1845, a singular question arose whether, when there was a capacity for sexual intercourse on the part of a woman, with a certainty that from physical defect it could never be prolific, this was sufficient to entitle the husband to a divorce. The woman was examined by Drs. Bird, Lever, and Cape; and they reported that the sexual organs were undeveloped, like those of girls who had not reached puberty, that the vagina was only three-quarters of an inch in depth, and that there was no uterus. They stated that sexual intercourse might take place in an imperfect way, but that conception could never result. On a second examination, seven months afterwards, it was found that the vagina had become elongated, and had then a depth of two inches; but there were no medical means of improving its condition or of removing the defect. It was contended for the husband that the defect was natural and irremediable, and that he was entitled to a sentence of nullity of marriage. On the part of the wife, it was insisted that, in order to entitle a party to this sentence, there must be an *utter impossibility* of sexual intercourse. The case, it was argued, was one of mere sterility, which was no ground for a sentence: actual consummation had taken place. Dr. Lushington, in pronouncing judgment, said, that mere incapability of *conception* is not a sufficient ground whereon to found a decree of nullity. The only question is, whether a woman is or is not capable of sexual intercourse; or, if at present incapacitated, whether that incapacity admits of removal? A power of sexual intercourse is necessary to constitute the marriage-bond; and this intercourse must be ordinary and complete, not partial and imperfect; yet it would not be proper to say that every degree of imperfection would deprive it of its natural character. If it be so imperfect as to be scarcely natural, it is, legally speaking, no intercourse at all. As to conception, there is no doubt that the malformation is incurable. If there was a reasonable probability that the woman could be made capable of natural coitus, the marriage could not be pronounced void: if she could not be made capable of more than an incipient, imperfect, and unnatural coitus, then it would be void. Dr. Cape stated that under present circumstances there could be only a restricted and limited connection: it could not be called perfect and complete. The vagina might possibly become a little more elongated, but this would expose the female to danger. From these facts the marriage was pronounced null and void. (See 'American Journal of Med. Sci.' Jan. 1848, p. 305.) Hence we may infer, that if the vagina had been of its natural length, notwithstanding the absence of the uterus, and the impossibility of conception, a sentence of nullity would not have been pronounced. This is rather conflicting with the doctrine, that the main object of a marriage, valid in law, is *ad proles procreandas*. (See 'Ann. d'Hyg.' 1872, 2, 388.)

The nature of the medical evidence required on these occasions will be *best understood* by the following extract from Oughton:—'Ad probandum

defectus judex compellere potest virum ad exhibendum præsentiam suam et ad ostendendum in aliquo loco secreto (per judicem assignando) pudenda sua, seu illos corporis defectus quos mulier objicit (si ex inspectione corporis apparere possint), medicis et chirurgis peritis prius judicialiter in præsentiâ de diligenter inspiciendo virum et de referendo in scriptis eorum judicium juratis. Et si medicorum et chirurgorum judicium sit quod morbus vel defectus viri fuerit insanabilis et incurabilis (tamen tenentur in relatione eorum judici ipsum morbum seu defectum specificare ne circumveniatur Ecclesia), et quod in eorum scientiâ, doctrinâ, experientiâ, morbus aut defectus hujusmodi nullâ re aut arte medicâ curari possit, mulier obtinebit in causâ: hoc addito et allegato ex parte mulieris, quod ipsa sit juvenis et ad procreationem apta, et quod per *tres annos* insimul pernoctarunt, et quod, quamvis a marito cognosci cupiebat, ab eo tamen cognita non fuit nec cognosci potuit. Et si defectus non possunt directe per medicos et chirurgos juratos judicari aut decerni; vel forsan dubia sit eorum relatio; allegetur ex parte mulieris, non solum quæ ultimo recitata sunt, sed etiam hoc addito:—*Quod sit virgo intacta nec a quoquam cognita.* Et ad hoc probandum judicialiter jurandæ sunt obstetrices ad inspiciendum mulierem, an vera sint hæc allegata. Et si judicio hujusmodi obstetricum, reperta fuerit virgo, saltem femina intacta nec a quoquam cognita; et si vir non possit aliquos defectus objicere contra uxorem, ob quos cognosci non possit; hæc dictarum mulierum relatio cum judicio medicorum et chirurgorum (quamvis dubio) unà cum cæteris prædictis indiciis (videlicet in eo quod mulier sit juvenis, et quod concubuit cum viro per triennium, ac quod ex aspectu apta et idonea videatur ad procreationem) sufficiunt ad divortium; seu potius ad pronunciandum *nullum ab initio* matrimonium fuisse inter hujusmodi personas: easque ab invicem, et ab omni vinculo et fœdere conjugali, liberas et immunes fuisse et esse. Et notu quod si defectus objiciantur contra mulierem probandi sunt isto modo per inspectionem et relationem.'

A case came before the Vice-Chancellor's Court, in February 1845 (*Wilson* v. *Wilson*), in which the woman procured medical certificates to prove that she was 'virgo intacta!' In drawing up such a certificate, a medical reporter should bear in mind that females have become pregnant with what is commonly regarded as the chief sign of virginity *intact*. Indeed, the division of the hymen has been often rendered necessary for the delivery of a child. Negative evidence of non-consummation from the physical condition of a woman, is therefore of much less value, *cæteris paribus*, than the affirmative evidence from the existence of a physical defect in the man. (See DEFLORATION, *post*; and on the value of evidence from the presence of the hymen, see 'Ann. d'Hyg.' 1872, 2, pp. 409, 412.)

When the defect is not apparent on an examination, the case is attended with considerable difficulty. Divorce has, however, been granted even in these cases, when the husband has acknowledged his incapacity, and when, notwithstanding cohabitation for some years, this admission has been confirmed by an examination of the wife. Even when the male organs do not appear well developed, and sexual desire is absent, great caution is required in drawing up a report. In the case of *Bury*, the marriage was dissolved on the ground of impotency; but this man afterwards married another woman and had issue,—a fact which proved that 'ecclesia circumveniatur.' This gave rise to a difficult question: for it was contended, if the divorce was null, the second marriage was unlawful and the issue illegitimate. It was decided, however, that the second marriage was only voidable; and that, until dissolved, it remained a lawful marriage, and the children born during coverture were legitimate. In investigating a case of this kind, when there is no apparent physical defect or malformation, it is necessary to examine the bodily state of

the person, whether he is effeminate, or, on the other hand, has about him any or all of the usual marks which attend the virile state. In the latter case the impotency may be only temporary; and it would be decidedly unsafe to pronounce an opinion adverse to the existence of procreative power.

From these considerations it will be perceived that, in order to justify a suit of divorce, on the ground of impotency or sterility, the impediment to intercourse or procreation should be established by good medical evidence, and it must be *apparent* and *irremediable*; it must also have existed before the marriage of the parties, and have been entirely unknown to the person suing for the divorce: if it has supervened after the marriage, this is no ground for a suit. The nature of the impediment is to be determined by private medical opinions or affidavits, based on an examination of *both* parties. There is one remarkable circumstance with respect to these cases; namely, that in nearly all of them, the suit is by the woman against the man; although there is no reason whatever to suppose that impotency and sexual malformation are more common in males, than malformation and sterility in females. We rarely hear of a husband instituting a suit of divorce on the ground of sterility (incapacity of procreation) in the wife; it is, I believe, in most instances, that the wife promotes the suit on the ground of impotency or incapacity of intercourse in the husband. The difficulty of establishing incapacity in a woman, and the facility of proving impotency from physical causes in a man, may probably account for this difference. The following case, which is of recent occurrence, is reported by Dr. Ettmüller, of Freiberg (Eulenberg's 'Vierteljahrs,' 1872, 1, 90). The malformation here described, which led to a suit of nullity, promoted by the husband against the wife, is probably not unfrequent among reputed females. If not detected at birth it may be detected at the age of puberty (see case, p. 278), and the unfortunate consequences of a matrimonial alliance prevented.

The plaintiff K. alleged that his wife, Caroline Wilhelmine, was incapacitated for sexual intercourse, and demanded a separation from her. An examination of husband and wife was ordered by the German Court of Appeal. The husband admitted that for the first quarter of a year after his marriage he had made no attempt to have connection with his wife, but after this time, on making the attempt, he found it to be impossible.

The husband, æt. 29, deposed that about eight days before his marriage he had sustained a serious injury to his genitals from the bite of a horse, and had been eleven weeks under medical treatment. Soon after his recovery, on attempting intercourse, he had reason to believe that his wife was differently constructed from other women. An examination of the husband showed that there was no deficiency or defect on his part.

The wife, æt. 26, was a healthy-looking person. Her voice was rough like that of a man, with shrill tones resembling those of a boy at puberty. The pomum Adami (larynx) projected as in a man. There was no appearance of breasts. The face was not hairy. There were some stiff hairs on the upper lip and chin. The pelvis was that of a male. There was a penis about one and a half inch long and one inch in diameter, with prepuce and glans, but no perforation for the passage of urine. This was below and behind the root of the organ (hypospadia, p. 296, *ante*). There were projecting labia, with a deep fissure between, in the situation of the vagina, about two inches in depth, and getting narrower as it proceeded backwards. No uterus could be felt. In one labium there was a perfectly well-formed testicle. The other contained none, but a testicle of smaller size was found in the inguinal canal.

On Dr. Ettmüller informing the wife that there was more of the male than the female sex about her, she said she was well aware that she was not like *other women.* Her parents had concealed her condition from her, and had

never consulted a medical man. She admitted she had never menstruated, and had not had any mucous discharges from the vagina. She had experienced but little sexual feeling, never towards men, but more towards women. She regretted her condition, and agreed to a separation from her husband. Dr. Ettmüller summed up his report by stating that the wife was an hermaphrodite, with more of the male than female development (*androgynus*, p. 277, *ante*), that she was incapacitated for sexual intercourse as a woman, that the sexual defect was congenital, *i.e.*, existing before the marriage, and that the defect was incurable. The marriage was declared void, and the wife was ordered to put on the clothes of a man.

Suits of this kind are sometimes instituted many months and years after the union of the persons; but it is pretty certain that the separation in these cases often depends on some other cause, which the law would not recognize as sufficient of itself, while it would admit the plea of impotency. The French law very judiciously applies the principle of condonation to such cases, so that no suit for nullity of marriage can be entertained, if cohabitation has continued for six months after the discovery of the personal defect. This appears to be more consistent with justice than our own law; but practically these suits, after protracted cohabitation, are always regarded with great suspicion. In one of these cases (*Castleden* v. *Castleden*) which came before the Divorce Court in Feb. 1860, the wife required a declaration of nullity of marriage on the ground of her husband's impotency. The parties were married in 1834 and cohabited until 1838. Of the three judges two were adverse to the petitioner's claim, and this was rejected. In *Marshall* v. *Marshall*, which came before the Court for divorce in July 1864, the wife petitioned for a decree of nullity of marriage on the ground of the impotency of the husband; the learned judge said he was not satisfied that the petitioner's case was established. He would, however, suspend his decree, and intimated his opinion that the petitioner ought for the present to return to cohabitation. If she refused, he would make an order to compel her to return; or, if she wished to appeal, he would formally dismiss the petition.

The following case, which came before the Divorce Court in July 1868, involved the novel question whether these suits of nullity were restricted to the husband and wife during life, or whether third parties could intervene to promote them for their own interest after the death of either. The plaintiff claimed a right to administer to the estate of his deceased wife, who had died intestate. He made the claim as her lawful husband. The next-of-kin of the wife, who were the defendants in the case, contended that by reason of physical incapacity, the marriage with the intestate was void, and he was not the lawful husband. He therefore had no legal right to claim administration.

Sir J. Wilde said that a distinction must be made between void and voidable. In cases of physical incapacity the marriage is not void but voidable under certain conditions. Thus the party complaining must be sincere on the ground on which he is asking relief. There must be no unreasonable delay, and the physical defect must be incurable. This matter of incapacity ought to be raised only by the person who suffers any injury from it, and who elects to make it a ground for asking that the contract of marriage should be annulled. Such a question can only be discussed and adjudicated in the lifetime of the parties. It is a matter of *personal* complaint only, and has always been dealt with as such. In this suit the rights of third parties have been introduced. The question whether two persons are married or not may arise on a variety of occasions, and be raised by third persons, as creditors or otherwise. Now if the parties themselves are content with the *consortium vitæ*, and prefer to maintain the bond of matrimony intact, would it not be almost intolerable that a third person should have a right to insist upon an inquiry into the

nature of their cohabitation and the revelation of their physical defects? The ground of nullity must therefore be confined to a suit brought by one of the parties to the marriage in the Matrimonial Court. He pronounced the contention of the defendants to have wholly failed, and gave judgment for the plaintiff, the husband, whereby, notwithstanding physical incapacity, he was constituted administrator to his deceased wife's estate.

M. Tardieu, in an elaborate paper on sexual identity ('Ann. d'Hyg.' 1872, 2, 154), remarks that marriage implies the lawful union of a man and woman. That such a contract cannot be entered into except between persons who are of different sexes. When the sex is disputed, the doubt can be removed only by an anatomical and physiological examination of the person. The intervention of a medical expert is indispensable in such a case, and the object of such intervention is perfectly defined. The problem for solution may be stated in these simple terms. Is the person married as a woman—a malformed woman—impotent and incapable of sexual intercourse? In this case, according to the strict interpretation of the law of France, there is no ground for nullity of marriage. Is the person a malformed man, presenting some doubtful appearances of the female sex? In this case there has been no legal marriage. It is null *ab initio*. Assuming that there are no beings entirely deprived of sex, there may be cases, although rare, in which a mixture of the organs of the two sexes may be found in the same person. Such a being is incapable of entering into the marriage contract, since whatever may be the sex of the person with whom the contract is made, there must be identity of sex, and therefore nullity of marriage.

From what has been stated at page 311, it appears that there is a distinction between the laws of England and France in reference to these personal defects. Impotency or incapacity of intercourse in a woman is in England a sufficient ground for annulling the contract, but not so in France. In the case described by M. Tardieu, it is distinctly stated that the law has not placed impotency in a woman among the causes for nullity of marriage. ('Ann. d'Hyg.' 1872, 2, pp. 153, 155.)

INFANTICIDE.

CHAPTER 73.

NATURE OF THE CRIME—EVIDENCE REQUIRED AS IN OTHER CASES OF MURDER—PROOF OF LIFE—BODY OF THE CHILD NOT DISCOVERED—MEDICAL EVIDENCE AT INQUESTS—UTERINE AGE OR MATURITY OF THE CHILD—VIABILITY—CHARACTERS OF THE CHILD FROM THE SIXTH TO THE NINTH MONTH—SIGNS OF MATURITY—RULES FOR INSPECTING THE BODY.

THE subject of child-murder has of late years attracted the attention of medical jurists by reason of the facility with which the crime may be perpetrated, and the great difficulty of bringing it home to the offender. The reports of inquests show that the deaths of infants are very numerous, and that they frequently occur under circumstances involving great suspicion. In 1862 there were 20,591 inquests in England and Wales, and among these were 3,239 inquests on infants under one year, of whom 859 were illegitimate; out of 124 verdicts of wilful murder, more than half related to infants. In 1863 there were 22,757 inquests, and of these, 3,664 were held upon children under one year; verdicts of murder were returned in 166 of these cases, and of these 79 were in Middlesex. In his annual report for 1862–3, Dr. Lankester, coroner for the central division of Middlesex, states that there were 68 deaths of new-born children in his district, and in 53 of these, verdicts of wilful murder were returned against persons unknown; it appears according to this report, that the crime is more frequent among women in domestic service than in any other class. The strongest motive for destroying the infant appears to be shame or the disgrace of having an illegitimate child. The crime is only attempted where pregnancy has not been discovered, and where delivery is effected in concealment. If the child has been secretly destroyed, the first opportunity is taken of casting its body into the streets. When the dead body of the child is secreted on the premises, discovery generally takes place. In several instances the mothers of newly-born dead children have been brought before the Coroner's court, and although when the mother is not discovered, there is no reluctance on the part of a jury to return a verdict of wilful murder, there is considerable hesitation in doing so when the mother may be sent to take her trial for murder. In all instances in which the evidence of guilt has been so clear that coroners' juries have found verdicts of wilful murder, the prisoners have been subsequently acquitted on their trials. Such is the history of cases in which the crime has been detected, and as the present state of the law offers every facility to a woman thus detected, to escape punishment, the extensive existence of the crime of infanticide will not excite surprise. ('Annual Report,' 1864, p. 83.) In the report of the Committee appointed to inquire on the best means of preventing the destruction of the lives of infants (July 1871), it is stated that the number of infants found dead in the Metropolitan and City Police districts during the year 1870, was 276, and the return up to May 19 for 1871 showed a total of 105. The greater number of these infants were

less than a week old. From the statistics of crime in Ireland published in December 1871, the same failure in the administration of the law is observed there. Infants form less than 3 per cent. of the population according to the Census, but murders of infants are in England and Ireland considerably more numerous than murders of adults. In Ireland, according to Dr. Hancock, the latter are 37 times the number of murders occurring in the rest of the population, in England and Wales 55 times. Out of 139 cases in which a coroner's jury found that infants had been murdered, arrests were made in 95 instances; but it is a striking proof of the strong feeling against capital punishment for infanticide that, although 42 persons were convicted of lesser offences, not one conviction for murder was obtained.

In France, child-murder appears to be common and on the increase. From statistical reports published in 1840 ('Ann. d'Hyg.' vol. 2, p. 340) by Dr. Bayard, there were in 10 years 2,549 persons charged with child-murder; among these 1,210 only were put upon their trial, owing to the general failure of evidence against the mothers; out of this number 410 were convicted, and as 'extenuating circumstances' were found in all cases, a correctional punishment only was inflicted. From a return lately made of the number of dead bodies exposed at the Morgue in Paris, it appears that in ten years, out of 3,344 bodies so exposed, there were 493 of new-born infants. This subject has been lately very fully investigated by M. Tardieu. The statistical returns for months and years are fully given by him. ('Ann. d'Hyg.' 1867, 2, 365.)

It will be seen from the nature of the medical proofs required, that a conviction for child-murder in England, in the present state of the law, seldom takes place. Notwithstanding the frequency of the crime, juries appear to shrink from returning a verdict of murder, even where the medical facts would fully justify it, but they almost invariably fall back upon the minor offence of which the accused person may be convicted, namely, that of concealment of birth. This, in fact, in reference to the crime with which the prisoner is charged, amounts to a verdict of not proven. In many recent cases, however, under the direction of some of our judges, verdicts of manslaughter have been returned.

Nature of the crime.—By infanticide we are to understand in medical jurisprudence, the murder of a *new-born* child. The English law, however, does not regard child-murder as a specific crime; it is treated like any other case of murder, and is tried by those rules of evidence which are admitted in cases of felonious homicide. In stating that infanticide is the term applied to the murder of a *new-born* child, it is not thereby implied that the wilful killing should take place within any particular period after birth. Provided the child be actually born and its body entirely in the world, it matters not whether it has been destroyed within a few minutes or not until several days after its birth. In the greater number of cases of infanticide, however, we find that the murder is commonly perpetrated either at the time of birth, or within a few hours afterwards.

M. Lanjardiere, a skilled advocate of the French bar, says that to constitute infanticide, there must be—1, a wilful killing; 2, the child must be living; and 3, it must be new-born. The wilful killing is proved by direct or circumstantial evidence; the fact of living is taken as synonymous with breathing, and the words new-born, *recens natus*, may be applied to a child from a few moments after birth until the cicatrization of the navel is completed. (See 'Ann. d'Hyg.' 1868, 1, 463.)

Although the law of England treats a case of infanticide as one of ordinary murder, yet there is a difference in the nature of the medical evidence required to establish the murder of a new-born child. It is well known that many children come into the world dead, and that others die from various causes either during or soon after birth; in the latter the signs of their having lived

are frequently indistinct. Hence to provide against the danger of erroneous convictions, the law assumes that every new-born child has been born dead, until the contrary appears from the medical or other evidence. The onus of proof that a *living* child has been destroyed, is thereby thrown on the prosecution, and no evidence imputing murder can be received, unless it is first made certain, by medical or other facts, that the child survived its birth, and was *legally* a living child when the alleged violence was offered to it. Hence there is a most difficult duty cast upon a medical witness on these occasions. In the greater number of cases the woman is delivered in secrecy, and no one is present to give evidence respecting the birth of the child. It is under these circumstances that medical evidence is especially required. For reasons elsewhere assigned (see vol. 1, p. 21), a medical man should be especially cautious in putting questions to a woman charged with this crime.

Body of the child not discovered.—In cases of child-murder, medical evidence is commonly founded on an examination of the body of the child; but it must be borne in mind, that a woman may be found guilty of the crime, although the body of the child is not discovered:—it may have been destroyed by burning, or otherwise disposed of, and a medical witness may have only a few calcined bones to examine. ('Ann. d'Hyg.' 1845, 2, 129.) In these cases of the non-production of the body, good legal evidence of the murder would, however, be demanded; and this evidence should be such as would fully establish a matter of fact before a jury. The production of the body of the child is therefore no more necessary to conviction than in any other case of murder. A woman has been tried within the last few years for the murder of her child, the body of which was never discovered.

Medical evidence at inquests.—In most instances, however, the body of the child is found,—an inquest is held, and medical evidence is demanded. In giving evidence at a coroner's inquest on a case of child-murder, as much care should be taken by a practitioner, as if he were delivering it before a judge at the assizes. Some medical witnesses are disposed to treat an inquest with indifference, and to be careless in their evidence, thinking probably that should the case come to trial, they could easily prepare themselves, and amend any statements which had been hastily made before a coroner's jury. But it should be remembered that the depositions taken by this officer are placed at the trial in the hands of the judge, as well as of the prisoner's counsel; and should a witness deviate in his evidence at the assizes from that which he gave at the inquest, or should he attempt to amend or explain any of the statements then made, so that they might, by the ingenuity of a barrister, be represented as having a new bearing on the prisoner's case, he would expose himself not merely to a severe cross-examination, but probably to the censure of the Court. If medical men were to reflect that in delivering their opinions before a coroner and a jury in a low tavern, they are virtually delivering them before a superior Court, it is certain that many unfortunate exposures would be easily avoided.

UTERINE AGE OR MATURITY OF THE CHILD. VIABILITY.

One of the first questions which a witness has to consider in a case of alleged child-murder is that which relates to the age or probable degree of maturity to which the deceased child may have attained in utero. The reason for making this inquiry is, that the chances of natural death in all new-born children are great in proportion to their immaturity: and that, supposing them to have survived birth, the signs of their having breathed are commonly obscure. It is found that the greater number of children who are the subjects of these investigations have reached the eighth or ninth month of gestation; yet charges of murder might be extended to the wilful destruction of children at the

seventh month or under, provided the evidence of life after birth was clear and satisfactory.

The English law does not act on the principle that a child, in order to become the subject of a charge of murder, should be born *viable*, *i.e.* with a capacity to live. It is observed by Mr. Chitty, although no authority is quoted for the statement, that 'the object of the law is to prevent injuries to infants having a capacity to maintain a separate existence;' and he further suggests that such a capacity should be proved, in order to complete the offence of infanticide. ('Med. Jur.' vol. 1, p. 411.) This argument, carried to its full extent, would render it no offence to put to death all persons afflicted with any mortal disease. I have been unable to find, in the numerous reported trials for infanticide, any ground for this statement. The capacity of a child continuing to live has never been put as a medical question in a case of alleged child-murder; and it is pretty certain that, if a want of capacity to live were actually proved, this would not render the party destroying it irresponsible for the offence. Children may be born alive at the sixth or seventh month; but because they are much less likely to survive than those born at the eighth or ninth month, this is not a ground of exculpation for any person who may wilfully destroy them. The real question, as we shall presently see, does not refer to the period of gestation at which a child may be born, but to the fact of its being *living* and *entirely born* when the murderous violence is offered to it. The French law, although it requires in some cases proof of viability in relation to the rights of inheritance, demands only proof of life after birth in reference to a charge of infanticide. (Briand, 'Man. Complet de Méd. Lég.' 201; also 'Ann. d'Hygiène,' 1863, 1, 399.) The meaning of the term *viability*, as applied to new-born children, has been elsewhere fully considered (p. 247, *ante*). M. Tardieu, in treating of infanticide, remarks that by viability the medical jurist must understand not life, but a fitness to continue life. Infanticide requires only that the child should be living. The crime implies the destruction of a new-born child, 'born living,' whatever may be its age, state of development, shape, strength, or capacity to live. Child-murder is therefore entirely independent of the question of viability, and yet it often happens on these occasions that a medical witness is asked—Was the child viable? But this question is put in order to show how far the strength of the child would enable it to resist the violence inflicted on it. An act of murder may be thus perpetrated on a living non-viable child. ('Ann. d'Hyg.' 1867, 2, 372.) See a paper by Dr. Böhm of Templin (Horn's 'Vierteljahrss.' 1866, 2, p. 801).

Although the doctrine of viability is not recognized in English jurisprudence, yet in a case which occurred in October 1836, a coroner refused to hold an inquest on the body of a child, because it had not reached an age (seven months) at which children are commonly born alive! In this case there was probably no harm done; but when we consider—1st, the great difficulty of determining the exact age of a child from the characters found on its body; and 2ndly, that many children born under the seventh month have not only been born alive, but have lived to an adult age, the adoption of a principle of this kind would be likely to give rise to dangerous abuses. It is impossible to admit that children may be destroyed with impunity because they happen to be born under the seventh month, or that a child should be assumed to have been born dead and any inquiry into the cause of death dispensed with, unless it can be medically established that it has passed the seventh month of gestation.

According to one medico-legal authority, if it can be shown that the child which is the subject of investigation has not attained this age (the seventh month), no charge of infanticide *can* or *ought* to be entertained. Are we to understand by this that children proved to have been born living before the *seventh month* may be wilfully destroyed, and the law take no cognizance of

the matter? If this be not the meaning, the statement amounts to nothing, because whether the child has reached the seventh, eighth, or ninth month, life and live birth must still be proved before a charge of murder can be made. I have known an instance of a child born between the sixth and seventh month living a fortnight; and many similar cases are recorded. On the doctrine above laid down, the deliberate destruction of such children, although actually living, ought not to be considered or treated as murder! It is satisfactory to know that such a principle as this is not recognized by the law of England. In the case of *Reg.* v. *West* (Nottingham Lent Assizes, 1848), a midwife was tried on the charge of causing the death of a child under the seventh month of uterine life (in the perpetration of abortion), not by direct violence applied to its body, but merely by leading to its premature birth. This case proves, therefore, that a charge of child-murder may be fairly entertained with respect to children *under* the seventh month. The woman in question in this instance was alleged to have been between the fifth and sixth months of pregnancy. The proof of this fact did not, however, prevent an indictment for murder and a full investigation of the case. We also learn from it, contrary to the suggestion of Mr. Chitty (*suprà*), that the *viability* of a child is not by the English law required to be proved on an indictment for child-murder. This child was certainly from mere immaturity incapable of maintaining a separate existence, and it was therefore *not viable*; but the judge who tried the case, in answer to an objection taken by prisoner's counsel, said that if the child was proved to have died under the circumstances alleged for the prosecution, it would still be murder. As at an early uterine period the fœtus is not born living, no question of murder can arise, except it be so far developed as to be able to survive its birth. The earliest period at which a child can be born living has been elsewhere considered (see p. 250). In reference to children born at the fourth or fifth month of gestation, a charge of concealment of birth may arise so long as the offspring has human form. Under these circumstances it is not necessary to prove that it was born living. At the same time, as such births at the fourth and fifth months are always the results of abortion either from natural or criminal causes, the charge is generally merged in the higher offence of procuring abortion. Here, again, it is not required to prove by medical evidence that the aborted fœtus was living when expelled from the uterus (p. 198, *ante*). In nearly all cases of child-murder, it will be found that the child has passed the seventh month of utero-gestation.

Characters from the sixth to the ninth month.—Up to the sixth month the appearances presented by the ovum and fœtus have been described in the chapter on ABORTION, p. 172, *ante*. The following are the characters whereby we may judge af the uterine age of a child from the *sixth* to the *ninth* month of gestation, a period which may be considered to comprise some cases of abortion and all cases of child-murder.

1. Between the *sixth* and *seventh*: The child measures, from the vertex to the sole of the foot, from ten to twelve inches, and weighs from one to three pounds. The head is large in proportion to the trunk; the eyelids are adherent, and the pupils are closed by membranes (membranæ pupillares). The skin is of a reddish colour, and the nails are slightly formed; the hair loses the silvery lustre which it previously possessed, and becomes darker. Ossification proceeds rapidly in the chest-bone, and in the bones of the foot; the brain continues smooth on its surface: there is no appearance of convolutions. In the male the testicles will be found in the abdominal cavity, lying upon the psoæ muscles immediately below the kidneys.

2. Between the *seventh* and *eighth* month: The child now measures between thirteen and fourteen inches in length, and weighs from three to four

pounds. The skin is thick, of a more decidedly fibrous structure, and covered with a white unctuous matter which appears for the first time. Fat is deposited in the cellular tissue, whereby the body becomes round and plump; the skin previously to this is of a reddish colour, and commonly more or less shrivelled; the nails, which are somewhat firm, do not quite reach to the extremities of the fingers; the hair becomes long, thick, and coloured; ossification advances throughout the skeleton; valvulæ conniventes appear in the small intestines, and meconium is found occupying the cæcum and colon. The testicles in the male are considered about this period to commence their descent,—or rather, the child's head being downwards, their ascent towards the scrotum. The time at which these organs change their situation is probably subject to variation. According to J. Hunter, the testicles are situated in the abdomen at the seventh, and in the scrotum at the ninth month. Burns believes that at the eighth month they will commonly be found in the inguinal canals. The observation of the position of these organs in a new-born male child is of considerable importance in relation to maturity, and it may have an influence on questions of legitimacy as well as of child-murder. Mr. Curling thus describes their change of position:—At different periods between the fifth and sixth months of fœtal existence or sometimes even later, the testicle begins to move from its situation near the kidney towards the abdominal ring, which it usually reaches about the *seventh* month. During the eighth month it generally traverses the inguinal canal, and by the end of the ninth, arrives at the bottom of the scrotum, in which situation it is commonly found at birth. ('Diseases of the Testis,' 2nd ed., p. 17.) Its absence from the scrotum does not necessarily indicate that the child is immature, because the organ sometimes does not reach the scrotum until after birth.

3. Between the *eighth* and *ninth* month: The child is from fifteen to sixteen inches in length, and weighs from four to five pounds. The eyelids are no longer adherent, and the membranæ pupillares have disappeared. The quantity of fat deposited beneath the skin is increased, and the hair and nails are well developed. The surface of the brain is grooved or fissured, but presents no regular convolutions: and the cineritious matter is not yet apparent. The meconium occupies almost entirely the large intestines; and the gall-bladder contains some traces of a liquid resembling bile. The testicles in the male may be found occupying some part of the inguinal canal, or they may be in the scrotum. The left testicle is sometimes in the scrotum, while the right is situated about the external ring.

4. *Ninth month. Signs of maturity.*—At the ninth month the average length of the body is about eighteen inches, and its weight from six to seven pounds: the male child is generally rather longer, and weighs rather more than the female. Extraordinary deviations in length and weight are occasionally met with. Mr. Owens has recorded a case in which a child at delivery measured twenty-four inches in length, and weighed seventeen pounds twelve ounces ('Lancet,' December 1838); and Dr. Meadows has reported another in which a child measured after death thirty-two inches, and weighed eighteen pounds two ounces. It survived four hours. ('Med. Times and Gaz.' August 4, 1860.) In a case which I was required to examine in June 1842, the child, a male, measured twenty-two inches, and weighed twelve pounds and a half. (For some practical remarks on this subject, by Dr. Ellsässer, see Henke's 'Zeitschrift,' 1841, vol. 2, p. 235.) The period of gestation for children of unusually large size is the same as that for children of average size. (See p. 257, *ante*.) According to Dr. Duncan, the length and weight of the child vary according to the age of the mother. They are greatest among children when the mother is from 25 to 29 years of age. When a woman is 25, the child weighs less. The child of a woman at 22, weighed seven pounds three ounces,

and that of a woman at 30, seven pounds seven ounces. The length varied in a less degree, being, for the different ages, at or about nineteen inches. ('Ed. Monthly Journal,' Dec. 1864, p. 500.)

At the full period the head of a child is large, and forms nearly one-fourth of the whole length of the body. The cellular tissue is filled with fat, so as to give considerable plumpness to the whole form, while the limbs are firm, hard and rounded; the skin is pale; the hair is thick, long and somewhat abundant; the nails are fully developed, and reach to the ends of the fingers —an appearance, however, which may be sometimes simulated in a premature child by the shrinking of the skin after death. The testicles in the male are generally within the scrotum. Ossification will be found to have advanced considerably throughout the skeleton. (See, in relation to the progress of ossification, a paper by M. Ollivier, 'Ann. d'Hyg.' 1842, p. 243.) The surface of the brain presents convolutions, and the cineritious matter begins to show itself. The internal organs, principally those of the chest, undergo marked changes, if the act of respiration has been performed by the child before, during, or after its birth.

The relative position of the point at which the *umbilical cord* is attached to the abdomen, has been considered by some medical jurists to furnish evidence of the degree of maturity. Chaussier thought that in a mature child, at the ninth month, the point of attachment of the cord exactly corresponded to the centre of the length of his body. Later observations, however, have shown that this is not quite correct. Out of five hundred children examined by M. Moreau at the Maternité, in Paris, the umbilical aperture corresponded to the centre of the body in *four* cases only. In the majority of these cases, the point of insertion was eight or nine lines below the centre. Among the cases of mature children which I have had an opportunity of examining, the umbilical aperture has generally been situated from a quarter to half an inch below the centre of the body. ('Guy's Hosp. Rep.' April 1842.) M. Moreau found, on the other hand, that in some children, born about the sixth or eighth month, the cord was attached to the middle point of the length. ('Lanc. Franc.' 1837.) On the whole, it will be perceived that no value can be attached to the situation of the umbilical opening, as a sign of maturity or immaturity.

The characters which have been here described as belonging to a child at the different stages of gestation, must be regarded as representing an average statement. They are, it is well known, open to numerous exceptions; for some children at the ninth month are but little more developed than others at the seventh; and in some cases a seven-months' cannot be distinguished with certainty from a nine-months' child (see p. 255, *ante*). Twins are generally smaller and less developed than single children; the average weight of a twin child is not more than five pounds, and very often below this. The safest rule to follow in endeavouring to determine the uterine age of a child is to rely upon a majority of the characters which it presents. That child only can be regarded as *mature* which presents the greater number of the characters found at the ninth month of gestation.

If the age of the child has been determined—whether it be under or over the seventh month—the rules for a further investigation will be the same. Should the child be under the seventh month, the medical presumption will be, that it was born dead; but if it has arrived at its full period, then the presumption is that it was born alive.

Conclusions.—The following may be taken as a summary of the principal facts upon which our opinion respecting the uterine age of a child may be based:—

1. At *six months.*—Length, from nine to ten inches; weight, one to two pounds; eyelids adherent; pupils closed by membranæ pupillares; testicles not apparent in the male.

2. At *seven months.*—Length from thirteen to fourteen inches; weight, three to four pounds; eyelids not adherent; membranæ pupillares disappearing; nails imperfectly developed; testicles not apparent in the male.

3. At *eight months.*—Length, from fourteen to sixteen inches; weight, from four to five pounds; membranæ pupillares absent; nails perfectly developed, and reaching to the ends of the fingers; testicles in the inguinal canal.

4. At *nine months.*—Length, from sixteen to twenty-one inches; weight, from five to nine pounds; membranæ pupillares absent; head well covered with fine hair; testicles in the scrotum; skin pale; the finger nails well formed and reaching to the ends of the fingers; features perfect—these and the body are *well-developed* even when the length and weight of the child are less than those above assigned.

5. The point of attachment of the umbilical cord, with respect to the length of the body, affords no certain evidence of the degree of maturity.

Inspection of the body.—The questions which a medical jurist has to solve, in examining the body of a new-born child, are—1. To determine its age, or the stage of uterine life which it has reached;—2. Whether it has lived to breathe;—3. Whether it has been born alive;—4. The period of time which has elapsed since its death;—5. The cause of death, whether violent or natural.

Hence, before commencing the inspection—

1. The length (measured from the summit of the head to the sole of the foot) and weight of the body should be taken;—2. The presence or absence of external fœtal peculiarities noticed;—3. Any peculiar marks or indications of deformity whereby identity may be sometimes established;—4. All marks of violence, in the shape of wounds, bruises, or lacerations, and the kind of instrument or weapon with which they were probably produced;—5. Whether the umbilical cord has been cut and tied, or lacerated; the appearance of the divided vessels, and the length of that portion which is still attached to the body of the child;—6. The presence or absence of vernix caseosa about the groins, arm-pits, or neck—the presence of this substance proves that a child has not been washed or attended to;—7. It will be necessary to state whether there are about the body any marks of putrefaction, indicated by a separation of the cuticle, change of colour in the skin, or offensive odour. It is obvious, that unless these circumstances are noticed before the inspection is commenced, they may be entirely lost as evidence. Notes should be made on the spot, and the original retained, even if copies be subsequently made.

A medical man cannot be too careful in noticing upon the body of the child any characters which may serve as proofs of identity. He must remember that the defence may be that the child is not that of the woman charged with murder. This observation applies especially to the examination of the bodies of children that may have survived their birth for some days. The body may be found wrapped in paper or in some article of clothing which may help to establish identity. If the child has survived its birth, it would be proper to form an opinion at once for how many days. The state of the umbilical cord, and whether the part to which it is attached is in the process of healing, or already healed, are facts which may help a medical opinion respecting the date of birth. In addition to these points, the sex of the child and the colour of the hair should be noted, as well as any particular marks on the skin (mother's marks), and, of course, all wounds or other injuries—their cause or mode of production, and their situation. At the Maidstone Lent Assizes, 1868, a case of some difficulty arose respecting the identity of a child alleged to have been murdered (*Regina* v. *Ward*). The dead body of a child

which had evidently survived its birth was found wrapped in clothing, and concealed near a high road, by which the woman charged with murder had been seen to pass on a certain day. The surgeon who examined the body thought that, from the state of it, the child had been dead a month, but he was unable to give any opinion of the cause of death. There was evidence that the child of the prisoner had disappeared when it was about a fortnight old.

It was contended, in defence, that the child whose body was found was not that of the prisoner. The child found as well as that of the woman was of the male sex, and had light hair; but the age formed a difficulty. The child of the prisoner must have been at least fifteen days old at the time of its death, while the surgeon considered that the body found was that of a child not more than ten days old. The prisoner, upon this evidence, was acquitted.

CHAPTER 74.

ON THE PROOFS OF A CHILD HAVING LIVED AT ITS BIRTH—EVIDENCE OF LIFE BEFORE RESPIRATION—SIGNS OF PUTREFACTION IN UTERO—EVIDENCE FROM MARKS OF VIOLENCE—EVIDENCE OF LIFE AFTER RESPIRATION—INSPECTION OF THE BODY—COLOUR, VOLUME, CONSISTENCY, AND ABSOLUTE WEIGHT OF THE LUNGS—STATIC TEST—WEIGHT INCREASED BY RESPIRATION—TEST OF PLOUCQUET—BLOOD IN THE PULMONARY VESSELS—SPECIFIC GRAVITY OF THE LUNGS.

On the proofs of a child having lived at its birth.—In some cases of alleged child-murder there has been evidence from eye-witnesses that the new-born child was living when violence was offered to it. In others the child has been found soon after delivery, still alive, but it has died subsequently from ill-treatment or exposure. In these cases, of course, medical proofs of such children having lived at their birth are not required. The evidence then takes the ordinary course as in the case of an adult. In *Reg.* v. *Meeks* (Bucks Lent Ass. 1868) it was proved that the prisoner had been secretly delivered of a child, which was shortly afterwards found in a cellar, still alive. The child died in about two hours, according to the medical evidence, from exposure and neglect. The lungs floated on water, but had only partially received air. In such a case, however, as the child was seen to be living after its birth, experiments on the lungs were unnecessary. The prisoner was convicted of manslaughter.

The question whether a child was or was not *born alive* is of the greatest importance in a case of alleged child-murder; and it is unfortunately one which, in respect to the proofs upon which medical evidence is commonly founded, has given rise to considerable controversy. When it is stated that in most cases of alleged infanticide which end in acquittals in spite of the strongest moral presumptions of guilt, the proof fails on this point only, it must be obvious that the question specially claims the attention of a medical jurist.

The medical evidence of a child having been alive, when violence was offered to it at its birth or afterwards, may be divided into two parts: 1, that which is obtainable before the act of breathing is performed; and 2, that which is obtainable afterwards. At present it will be proper to confine our attention to the question, whether the child was *alive* when it was maltreated; the fact of its having been *born* alive will be a matter for future consideration. These two questions have been frequently but improperly associated, thus rendering the subject confused; but it must be so obvious as scarcely to require stating, that violence of a murderous kind may be offered to a living child *before* it is entirely born; and that owing to this violence it may come into the world dead.

EVIDENCE OF LIFE BEFORE RESPIRATION.

It was formerly supposed, if the lungs contained no air, that the child could not have breathed, and it must have been born dead. But neither of these views is correct:—children have been known to breathe feebly, and continue in existence many hours without visibly distending the cells of the lungs with air,—the absence of air from the lungs, therefore, furnishes no proof either that respiration has not been performed, or that the child has not lived. ('G. H. Rep.' April 1842.) The restoration of many children apparently born dead is a clear proof that many are born living who might be pronounced dead, simply because breathing and life have been considered synonymous terms. (See on this subject a paper by Dr. Märklin, 'Casper's Vierteljahrsschr.' 1859, 2, 26; also an article in the same volume 'Leben ohne Athmen,' p. 297.) That our law-authorities will admit evidence of life in a child before the establishment of respiration, is clear from the decision in *Rex.* v. *Brain*, in which the judge said, that a child might be born alive, and not breathe for some time after its birth ('Archbold, Crim. Plead.' 367), as also from the charge of Coltman, J., in the case of *Rex* v. *Sellis* (Norf. Spr. Circ. 1837). In this instance it was alleged that the prisoner had murdered her child by cutting off its head. The judge directed the jury, that if the child was *alive* at the time of the act, it was not necessary, in order to constitute murder, that it should have breathed. In fact, it would appear that breathing is regarded as only *one* proof of life; and the law will, therefore, receive any other kind of evidence which may satisfactorily show that a child has lived, and make up for the proof commonly derived from the state of the lungs. It will be first necessary for a medical practitioner to prove that the child under examination has recently died, or, in other words, that there are good grounds for believing it to have been *recently living*. Hence, if the body be highly putrefied, either from the child having died in the uterus some time before birth, or from its having been born and its body not discovered until putrefaction had far advanced both internally and externally, the case is utterly hopeless. The medical witness will in general be compelled to abandon the investigation, because the body can furnish no evidence whatever of life after birth. The examination of the organs of the chest would throw no light on the case, for here we are assuming that the lungs are in their fœtal condition.

Signs of putrefaction in utero. Date of death from appearances of the body.—The phenomena of putrefaction in air have been elsewhere described (vol. 1, p. 93); but the changes which ensue when a child dies and is retained within the uterus, may be briefly adverted to, because they may sometimes form a subject for judicial inquiry. According to Devergie, when a child dies in utero, putrefaction takes place as rapidly as in the open air ('Méd. Lég.' 1, 526); but this is doubtful.

In an advanced state of *uterine putrefaction*, the body of the child is so flaccid, that when placed on a table it becomes almost flattened by the mere gravitation of its parts. The skin is of a reddish-brown colour, not green, as in a putrefied body exposed to air. The cuticle covering the feet and hands is white, and sometimes raised in blisters,—the cellular membrane is filled with a reddish-coloured serum, the bones are movable, and readily detached from the soft parts. In the opinion of Devergie, the principal difference between uterine and atmospheric putrefaction in the body of a new-born child, is seen in the colour assumed by the skin: but it must be remembered, that should the child remain exposed to the air after its expulsion, the skin may acquire the colour observed in cases of atmospheric putrefaction. The changes

which have just been described are such as we may expect to find when a child has been retained in the uterus eight or ten days after its death. When it has remained for some weeks in the uterine cavity, the body has occasionally been found in an adipocerous state, or even encrusted with phosphate of lime. If in any case we are able to state distinctly that the body of a child has undergone uterine and not atmospheric putrefaction, it is clear that it could not have come into the world alive, and no question of murder would arise. Under ordinary putrefaction in air, a child may have been really brought into the world living, and the process may have destroyed every proof of that fact.

Let us suppose that a child died in utero twenty-four hours before it was born: if it be soon afterwards examined, there will be no marks of putrefaction about it, unless the membranes have been ruptured, and the appearances will closely resemble those met with in the body of a child that has been born alive, and died without breathing; or of one that may have died in the act of birth. It will be impossible to say, in such a case, whether the child came into the world living or dead. M. Sentex states, from his experience, that the dead fœtus retained in utero, with the membranes unruptured, undergoes one of three changes—maceration, putrefaction, or mummification. The first is the most common condition, but the changes differ from those which take place in the body when exposed to air. Putrefaction, in its common signification, is rarely met with. Air appears to be necessary for it. M. Sentex found a characteristic sign to be redness of the skin and eyes. He has given a summary of the appearances as met with in the dead fœtus from the second day to the second week. ('Ann. d'Hyg.' 1869, p. 1, 487.) Dr. Hicks found that rapid decomposition took place when the child died some time before the commencement of labour. In one case he had known putridity to have been established in twelve hours. He met with three instances in which there was proof that the child was alive within twenty-four hours of its birth, and yet its body was born more or less putrid (decomposed), but in these instances of rapid putrefaction, the membranes had been ruptured for some time. ('Guy's Hosp. Reports,' 1866, p. 477.) This is, no doubt, one of the conditions which materially influences the degree of decomposition which the dead body of a fœtus undergoes in the uterus, and may account for the discrepant statements made by some writers on this subject. A medical man cannot rely upon the presence of offensive discharges before birth as absolute evidence of the death of the fœtus. In two instances Dr. Hicks met with well-marked putridity of the discharges before the birth of the child, yet in one of these the child was born alive and strong. In the other there was evidence of life in the child (loc. cit.).

Evidence from marks of violence.—It has been proposed to seek for evidence of life, under these circumstances, by observing the characters presented by marks of violence on the body. In general, when children are murdered, the amount of violence inflicted is considerably greater than that which is required to destroy them, whereby satisfactory proofs of the crime are occasionally obtained. On the other hand, the body of a still-born child, dead from natural causes, is often covered with lividities and ecchymoses; the fœtal blood does not coagulate with the same firmness as in the adult: hence the evidence derivable from the extent, situation, and characters of marks of violence, is generally of too vague and uncertain a kind to allow of the expression of a medical opinion that the child was living when the violence was offered to it. The characters which have been already described as peculiar to wounds, contusions and fractures inflicted during life, may be met with in a child whether it has breathed or died without breathing. (Vol. 1, pp. 459, 465, 662).

So, again, these characters are open to the exceptions there pointed out; for they will be equally present, supposing the wounds to have been inflicted immediately after the cessation of respiration or circulation in the child, or after the cessation of circulation only, if the act of breathing has not been performed. Marks of violence on the body of a child that had died in utero twenty-four or forty-eight hours before it was born, would not present the characters of injuries inflicted on the living. There would be no ecchymosis and no effused coagula of blood. These marks, when they exist, although they may establish that a child was either living or but recently dead at the time they were inflicted, can never show that it was *born* alive. Injuries met with on the bodies of children alleged to have been born dead ought, however, to be of such a nature as to be readily explicable on the supposition of their having arisen from accident. If, from their nature, extent, or situation, they are such as to evince a wilful design to injure, it is a fair ground for a jury, not for a medical witness, to inquire why these extensive wounds, or other marks of violence were inflicted on a child, if, as it is alleged, it was really born dead. It must be confessed that in such a case there would be a strong moral presumption of murder, although medical proof of life or of live birth, might totally fail.

As a summary of these remarks, it may be observed, that although physiologically a child may live for a certain period after its birth without breathing, and legally its destruction during this period would amount to murder, yet there are at present no satisfactory medical data to enable a witness to express a positive opinion on this point. If other evidence were adduced of a child having lived and been destroyed under these circumstances,—as where, for example, a woman causes herself to be delivered in a water-bath, or an accomplice covers the mouth of an infant in the act of birth, or immediately after it is born,—a medical witness would be justified in asserting that the absence of the signs of respiration in the lungs was no proof that the child had been born dead. Indeed, it is apparent that the process could not be established, owing to the criminal means actually employed to prevent it. Whether a jury would convict upon such evidence is doubtful; but this is of no importance to the witness; his statements ought always to be made according to correct and well-ascertained medical principles, and not for the purpose of procuring either the conviction or acquittal of persons accused of offences against the law. In general, those cases in which questions relative to life before respiration might arise are stopped in the Coroner's court,—the usual practice being, when the signs of respiration are absent or imperfect, to pronounce that the child was born *dead*. If the lungs sank in water, the presence of marks of violence on the body would be considered as furnishing no evidence; for the sinking of the lungs would be taken as positive evidence of still-birth, an incorrect inference upon which some remarks will be made in speaking of the hydrostatic test. The following case was the subject of a criminal charge at Havre:—A woman was delivered of twins. So soon as the first child was born, but not before it had breathed, she killed it by fracturing its skull with a wooden shoe. In a few minutes afterwards the second child was born, but scarcely had its head presented when she seized it and fractured its skull in a similar manner. This double crime was soon discovered. On an examination of the bodies of both children, the same degree of violence was found, presenting in each case precisely similar characters. There can be no doubt, from the appearance of the injuries, that they must have been inflicted on both children at a time when the circulation was going on. In one child, however, it was proved that respiration had taken place; in the other that it had not. In the latter case many practitioners would at once have affirmed that the child had not lived, because there was no proof that it had respired; and they would have proceeded to draw the inference that this could not have been a case of

infanticide. Dr. Bellot, however, stated that, although the child had not breathed, he had no doubt it had been *born alive*, and that it would have lived to breathe but for the violence inflicted. This opinion was chiefly founded upon the similarity in the characters presented by the marks of violence in the two cases. ('Annales d'Hygiène,' 1832, 2, 199.) See further remarks upon this subject, by M. Ollivier, 'Ann. d'Hyg.' 1843, 1, 149; also by M. Devergie, 'Méd. Lég.' 1837, 1, 400.

The great question involved in this, and in all similar cases, is the following:—Does the law regard the wilful *prevention of respiration* as murder? There cannot be the slightest medical doubt that living children are occasionally thus destroyed in the act of birth: they die, not from the actual infliction of violence, but because, either through accident or design, the performance of that act which is necessary to maintain existence when the child is born, is prevented. Such a case has not yet been decided, although, from the dicta of our judges, it would probably involve a charge of murder. In a case published by Dr. Wharrie, a pregnant woman, thinking she was about to have a motion, sat on an earthen pitcher, two feet in depth, which happened to be full of water. She was there delivered of a child, which fell into the water, and was thus prevented from breathing. The child was full-grown, and its body was free from putrescency. It weighed six pounds, and measured twenty inches. There were no external marks of violence, and the navel-string had been *tied*. The lungs weighed two-and-a-half ounces; they were of a liver colour, contained no air, and sank in water. The medical opinion was, that from the size and general appearance of the child, and the state of the parts discovered on dissection, it was mature,—that it had not breathed, and life might have been either wilfully or accidentally destroyed. The examiners wisely declined giving the usual opinion from the sinking of the lungs; *i.e.* that the child had been born dead. The woman was not prosecuted, probably on the assumption that the death of the child might have been accidental. As Dr. Wharrie truly observes, there was no medical proof that the child was born alive; although there was a strong moral presumption that its life was destroyed in the act of birth. ('Ed. Monthly Jour.' Oct. 1845, p. 796.)

Dr. Bayard mentions a case, in which a woman, under somewhat similar circumstances, was convicted of the murder of her infant. In this case there was no evidence of breathing, but the woman admitted that she fractured the skull of the child, with the intention of destroying it, thinking that she perceived a motion of its legs after it was born. ('Ann. d'Hyg.' 1847, 1, 455.) One physician thought that the child was living when the blows were inflicted; two others that it was dead. In Dr. Bayard's opinion the absence of the signs of respiration must be taken as a circumstance in favour of the accused.

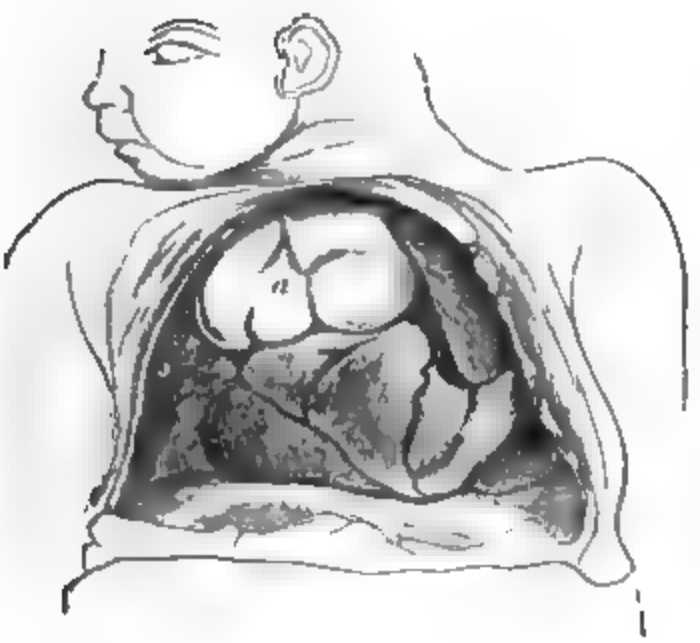
EVIDENCE OF LIFE AFTER RESPIRATION.

There is no doubt that the proof of the act of respiration furnishes the best and strongest evidence of a child having lived at or about the time it was born. It does not, however, show that a child has been *born alive*. The physical changes in the organs of a child, which result from the establishment of this process, take place in the lungs immediately, but in the heart and its appendages more slowly. It is therefore chiefly to the *lungs* that a medical witness looks for proofs of respiration. Sometimes, however, these organs are found in their fœtal condition or nearly so; for although a child may have survived its birth many hours, there may be no evidence of the fact from the state of the lungs. To such cases the remarks now about to be made cannot of course apply: the proofs of life must then be sought for elsewhere, and if none can be found, the case is beyond the reach of medical evidence. But it is obvious

that the occasional occurrence of cases of this description can present no objection to our still seeking for proofs of life in the state of the lungs, any more than the fact of poison not being always discovered in the body of one who has died from poisoning, would be a bar to our seeking for the proofs of poison in every unknown case which presented itself. It is the more necessary to insist upon this point, because some have held that, as we cannot always derive proofs of life from an examination of the lungs of new-born children, we should abandon all evidence of this description, and leave the case in its original obscurity. The very object of medical jurisprudence is, to endeavour to remove these difficulties, and to show in every department of the science, the degree to which we may safely trust the medical proofs of crime, however insufficient, inconsistent, or contradictory they may at first sight appear.

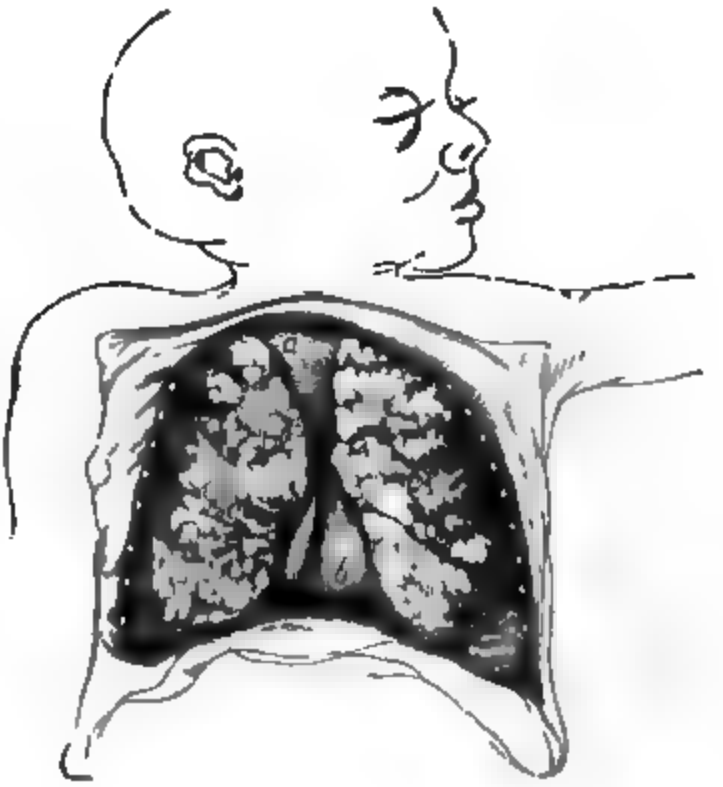
Examination of the lungs.—Some have pretended that the fact of respiration having been performed would be indicated by the *external form of the chest.* Thus it is said, before respiration the chest is flattened, while after that process it is arched in front. The diameters of the cavity have been measured, and certain comparisons instituted (Daniel), but these experiments have been attended with no practical results, and have long been abandoned by medical jurists. Admitting that such a visible change of form is occasionally produced by respiration, it is obvious that in these cases experiments on the lungs may be readily made; and on the results of these, and not upon minute changes in the capacity of the chest, would a medical opinion be based. The cavity of

Fig. 152.



View of the Organs of the Chest before breathing. *a.* Thymus gland. *b.* The heart in its pericardium. *c, c.* The lungs.

Fig. 153.



View after perfect breathing. *a.* Thymus gland. *b.* The heart. *c, c.* The lungs.

the chest may be conveniently laid open by carrying incisions from below the clavicles downwards on each side from about half the length of the ribs backwards. The diaphragm should be separated from the cartilages without opening the abdomen; the ribs sawn or cut through, and the flap formed by the anterior parietes of the chest turned upwards. The illustrations, figs. 152, 153, will serve to show the difference in the relative position of the organs of the chest in a new-born child before and after respiration. 1. If a child has *not breathed*, the appearances will be seen as in fig. 152. The thymus gland, as

large as the heart, occupies the upper and middle portions of the cavity;—the heart within its membrane (pericardium) is situated in the lower and middle portion, and is rather inclined to the left side. The lungs are placed quite in the back part of the chest, so as often to give the impression that they are wanting. In some instances they project slightly forwards by their anterior margins, but in no instance, unless congested, infiltrated, or otherwise diseased, do they cover and conceal the heart. The thymus gland is sometimes of a pale fawn, at others of a deep livid colour; but there is no appreciable difference in this organ in new-born children, before or after the performance of respiration. 2. On the other hand, when a child has *fully breathed*, the most striking differences will be observed in the colour and prominence of the lungs. They are of a light red or pinkish hue, project forwards—appear to fill the entire cavity of the chest, and cover, and in great part conceal by their anterior margins, the heart and its membranes. (Fig. 153.) We may meet with every variety in the appearances between these two extremes; for the act of breathing often requires a considerable time in order that it should be *fully* established, especially in those children which are of a weakly constitution or prematurely born. Hence the lungs will be found to occupy their respective cavities to a greater or less extent, and to cover the pericardium more or less, not according to the length of time which a child has lived, but according to the perfection with which the process of respiration has been performed. It will be seen hereafter that although, as a general rule, the lungs are more perfectly filled with air in proportion to the time during which a child survives its birth, yet this is open to numerous exceptions. It will next be necessary to give particular attention to certain other physical characters presented by the lungs.

1. *Colour of the lungs.*—The colour of the lungs *before respiration* is of a brown-red, blueish, or deep violet; it is subject to variation. Some medical jurists have compared it to the colour of the spleen. It is important to remark, that a very short exposure to air will materially brighten the colour of the lungs in the parts exposed, so that it should be observed and recorded immediately on opening the chest. *After respiration*, the lungs acquire a light red hue in proportion to the degree in which the process has been performed. If imperfectly established, they will be mottled, generally about the anterior surfaces and margins, the patches of light red being intermixed with the livid fœtal hue, and being slightly raised, as if by distension, above the general surface of the organs. The light red tint changes, after a short exposure to air, to a bright scarlet. This change in the colour of the lungs is not a necessary, nor is it an invariable consequence of a child having lived after its birth. I have known a child to live twenty-four hours breathing feebly, and on examining the body, the colour of the lungs was identical with that of the organs in the fœtal state. The change of colour is then a usual, but by no means a necessary consequence of the enjoyment of life; so that the retention of the fœtal colour does not furnish positive evidence of still birth. Again, the circumstance of the lungs having a light red colour is not an infallible criterion of the child having lived and breathed; for the artificial introduction of air by a tracheal tube or otherwise, in the attempt to resuscitate a still-born child, is attended with the same physical change. In the course of numerous experiments, purposely made, I have found no appreciable difference. Bernt says, that artificial inflation will not produce a scarlet red colour in the organs, and therefore that this is a criterion of respiration. ('Ed. Med. and Surg. Jour.' vol. 26, p. 367.) I have not only observed this colour to be absent after respiration, but have actually produced it by artificial inflation in the lungs of a dead child. Dr. Falk, of Berlin, has made numerous observations on the colour of the lungs during uterine life and after birth. ('Ann. d'Hyg.' 1869, 2, 462.) It has been already stated that the colour varies much in new-born children, irrespective

of respiration. In the early periods of fœtal life the organs are of a pale red hue, and they become deeper in colour as the quantity of blood circulating through them increases; but it is impossible to determine the uterine age by the colour. The effect of breathing and of exposure to air has been already noticed. Lungs which have only partially breathed have a mottled or marbled colour on the surface, but no great reliance can be placed on this appearance as a sign of respiration. Dr. Falk has pointed out certain pathological conditions which may modify the colour of the lungs in new-born children. This paper is published in Horn's 'Vierteljahrsschrift,' 1869, 1, pp. 1, and 207. It completely exhausts the subject.

2. *Volume of the lungs.*—The difference in the relative situation of the lungs before and after respiration has been already described. This difference depends entirely upon the increased volume or dilatation of the organs, arising from the introduction of air. *Before respiration*, the lungs are in general scarcely visible, unless forcibly drawn forwards in the chest. When it has been perfectly accomplished, the volume is so much increased, that the bag of the heart (pericardium) is almost concealed by them. Respiration must, however, have been very perfectly performed in order that this condition should exist to the full extent described; but I have known the lungs to acquire a considerable volume in a healthy and vigorous child from only two or three respirations. The child was destroyed by craniotomy, and died before it was entirely born. In other instances a child may live for one or two days, and the volume of the organs be but little altered. Schmitt has remarked, that the lungs have sometimes a considerable volume before respiration. I have met with this in more than one instance; but this condition will be found in general to depend on disease. As the altered volume of the healthy lungs depends on the introduction of air, the effect is the same whether the air be derived from the act of breathing, from artificial inflation or from putrefaction. Other circumstances must therefore be considered, before we draw any inference from this physical change.

3. *Consistency of the lungs.*—The lungs, *before respiration*, feel like the liver, or any other of the soft organs of the body. They are firm under the finger, but their substance may be lacerated by violent compression. *After respiration* has been fully performed, there is a distinct sensation of what is termed crepitation, on compressing them, *i.e.* air is felt within them. This condition of the organs will, of course, depend on the degree to which respiration has been carried. The lungs of children that have lived for a considerable time after birth will sometimes give no feeling of crepitation under the finger. Generally speaking, lungs of this kind present the other fœtal characters: thus they are small and of a livid colour. There are, however, cases in which the lungs may have the light red colour of respiration, and be actually much dilated in appearance, yet no feeling of crepitation will be perceptible on pressure. This character therefore is by no means a necessary accompaniment of the other two. Crepitation furnishes a presumptive evidence of respiration; but it may be equally met with in lungs that are putrefied, or which have received air by artificial inflation. The characters here described are seldom found in the lungs of children that have been born prematurely, although these children may have lived some time after birth; they depend on respiration, and in the exceptional cases referred to this process is only slowly and imperfectly established. Independently of the feeling conveyed by the pressure of air, a section of the lungs examined by the microscope will enable the examiner to form an opinion whether air has or has not penetrated into them; in the former condition air-cells will be visible, and when the cut surface is pressed a bloody froth will escape.

4. *Absolute weight of the lungs. The static test.*—The absolute weight of

the lungs before respiration is less than that which they have after the establishment of the process. From this an inference has been drawn that the absolute weight of the lungs in an unknown case, compared with certain averages, will aid the inquirer in ascertaining whether respiration has or has not been performed. In order to determine the weight of the lungs, these organs should be carefully separated by dissection from the heart and thymus gland, and removed with the trachea and bronchi attached. Previously to their removal, ligatures should be placed on the pulmonary vessels, so that no blood may escape from the lungs. They should now be weighed, and the weight accurately noted in grains. In taking this weight it does not appear necessary to make any distinction founded on the sex of the child, or on the difference of weight in the two lungs; the only exception would be, perhaps, in relation to twin children imperfectly developed. The average weight *before respiration*, derived from nine cases, was found to be 649 grains. According to Dr. Traill, the weight varies from 430 to 600 grains. It is of importance in taking the weight of these organs to observe whether the child is at or near maturity, and whether it is of or about *the average size and weight*: owing to a neglect of this rule, it is highly probable that comparisons have been made of the absolute weight of the lungs in children of different ages, which a full statement of the facts would not have justified. If it be small and immature, or unusually large, the lungs will weigh either less or more than the average. The average weight of the lungs, *after respiration*, derived from three cases, was 927 grains; but in making an estimate of this kind, much will depend upon the degree to which respiration has been carried. In three cases, in which the children lived half an hour, six hours, and twenty-four hours respectively, the process had been so imperfectly performed, that the lungs varied but little in weight from the average before respiration. ('G. H. Rep.' No. V.) The truth is, we cannot compare the lungs of children, as to weight, according to the *time* which they may have survived birth, but rather according to the *degree* to which the lungs have been penetrated by air. In one instance of alleged child-murder, where a child was probably killed soon after birth, the lungs weighed 1,000 grains. In another instance, where the child had certainly lived eight or nine days, the lungs weighed only 861 grains. In the first case, respiration had been perfectly performed; in the second, imperfectly. Hence, to say that the lungs weighed so much *after* respiration, amounts to nothing, unless we can estimate, by a sight of the organs, its degree; and any calculation founded upon such dissimilar cases must unavoidably lead to error.

The increase of weight after birth is commonly ascribed to the altered course of the blood, under the establishment of the respiratory process, as well as to the fact that more blood circulates through the lungs after, than before respiration. Practically, this view is confirmed by the contraction of the ductus arteriosus, and the simultaneous enlargement of the pulmonary arteries; changes which have been occasionally observed when the child has survived its birth for only a very short period. As these normal changes in the duct depend on the establishment of respiration, so we cannot expect to find them when the process has been imperfectly performed, although the child may have lived several days. Another circumstance must also be considered in basing an opinion on the absolute weight of the lungs; although there does not appear to be any strict normal relation between the weights of the body and lungs in new-born children, it is certain that in the bodies of children of unusual weight the lungs will be found much heavier than the average, whether the child has breathed or not. The body may vary, from six to eighteen pounds; the lungs under these circumstances will also differ in weight.

Weight of the lungs increased by respiration.—The healthy lungs of mature new-born children become heavier after respiration, and according to its

degree; and where a deviation from this rule is observed, it may probably be explained by the circumstance that the lungs of an immature have been compared with those of a mature child—the lungs of an undeveloped twin with those of one not a twin, or the lungs of one which has breathed imperfectly with those of another in which respiration has become well established. In this respect the extensive tables drawn up by Lecieux are liable to lead to erroneous inferences, relative to the effect of respiration on the absolute weight of the lungs. The weights of the organs are noted, but the *degree* to which respiration had been performed is so loosely stated as to allow of no fair inference of the effect of this process upon the weight. The time which the children survived is stated; but this, it is very well known, furnishes no criterion of the degree to which respiration has been carried. Again, we are not informed whether due care was taken to ascertain if the lungs were healthy or diseased. ('Considérations sur l'Infanticide.' Paris, 1819.) The following table of the weight of the lungs, in four cases from my own observation, will show how much the organs are liable to vary in weight after birth, according to the *degree* of respiration:—

Case 1.	Born dead	Weight,	687 grs.
2.	Lived 6 hours	„	774
3.	Lived 24 hours	„	675
4.	Lived 9 hours	„	861

Relying upon a table of this kind only, without comparing the other characters of the lungs with the weight, it might be inferred that the organs would weigh less in a child which had survived its birth twenty-four hours than in another which had been born dead, and that there would be very little difference in the weight, whether the child lived six hours or nine days; but when it is stated that in Case 3 the lungs had every fœtal character possessed by those in Case 1, and that in Case 4 respiration had been obviously very imperfectly performed, the difficulty is removed. Such cases should rather be compared with the lungs in the fœtal than in the respired state. They merely show what is very well known to, and admitted by all medical jurists, that there are some instances in which the fact of respiration cannot be determined by the application of the static or any other test to the lungs. But this is certainly no valid reason why evidence from this source is to be rejected in all other cases. It may be fairly granted that the weight of the lungs of some children that have outlived delivery may not come up to the weight assigned to those of children that have breathed; because, as we have seen, children may survive birth many hours without the process of respiration being properly established. On the other hand, as in Chaussier's observations, the lungs of the still-born may be sometimes as heavy as those of children that have breathed; but since the lungs of the still-born would contain no traces of air, the weight above the average in these cases could not be assigned to respiration. Among such subjects, whatever might be the weight of the lungs, if the facts were unknown, it would be impossible to say whether the children were born living or dead. (See 'Ed. M. and S. J.' vol. 26, p. 375.) Increased weight, therefore, is only one among several circumstances to which a medical jurist should attend.

We must not fall into the error of supposing that the lungs increase in weight acording to the length of time which a child survives its birth; it is within the limits of a few days, according to the degree of perfection with which a child breathes; hence we may meet with cases of children born alive, surviving some hours or days, and yet after death the lungs will retain their fœtal weight. This is observed in immature children, in most twin children, and in those which are mature but weakly. Among many instances that have

come to my knowledge, no difficulty has occurred. The signs of respiration have been sufficiently well developed to justify a medical opinion, although the child had probably not survived its birth above a few hours, or even minutes. ('G. H. Rep.' April 1842.) The cases of imperfect respiration above alluded to rarely go beyond a coroner's inquest, for want of clear evidence of life. There may be a difference of opinion as to the relative number of instances of perfect and imperfect respiration in new-born children; but a case is never likely to proceed to trial unless signs of this process are well marked; and thus some who are charged with murder on strong suspicion escape through the want of sufficient medical evidence to establish the fact of respiration and life.

It is scarcely necessary to observe that the air which the lungs receive by respiration cannot add to their absolute weight. This is because they are in the condition of a bladder, which weighs the same whether it be filled with air or empty. The increase of weight is solely due to the additional quantity of blood, which, owing to the altered course of the circulation, permeates their structure. Hence it follows that, when the lungs are distended with air, either from artificial inflation or from putrefaction, the fœtal weight will remain unaltered; and by this means, it is contended, we may distinguish lungs that have breathed from those which have been artificially inflated. Orfila states that the fœtal lungs removed from the chest weigh more before they are artificially inflated than afterwards—a circumstance which may depend upon the fact that the impulse employed in inflation may have forced out a portion of blood or other liquid. In carefully performing this experiment, I have found that there was not even the least fractional difference, but that the inflated lungs weighed precisely the same as in the uninflated state. From what has already been said, it follows that great weight of the lungs can obviously furnish no proof of respiration, unless this be accompanied by the other physical changes indicative of this process; as, for example, great increase in volume from the presence of air and crepitation. If the lungs be very heavy, and at the same time contain little or no air, it is certain that the increase of weight must depend upon disease or other causes—not upon respiration. In one case which I had to examine, the lungs were large, and weighed upwards of 1,200 grains. They contained no air; when divided into thirty pieces, not one portion floated, nor could any air be seen on the closest examination. It was therefore clearly impossible to ascribe a weight so much above the average to the effects of respiration. On the other hand, in a case communicated to me by Mr. Cann, of Dawlish, the lungs of a new-born child apparently full-grown, although fully distended with air, weighed only 626 grains. In this case the body of the child weighed only six pounds, and a quantity of blood had no doubt escaped from the lungs, owing to the pulmonary vessels not having been tied before their removal from the chest. It must not be forgotten that all the physical characters presented by lungs that have respired are liable to certain fallacies: but, as in the evidence derived from tests used in poisoning, these may be removed, or the force of the objection diminished, by not basing an opinion on one or two conditions only. We should take the whole combined; for it would be as wrong to regard great weight in the lungs *taken alone* as an absolute proof of respiration as it would be to draw the same inference from a mere change in the colour, volume, or consistency of the organs. This is in accordance with the view adopted by the late Professor Orfila. ('Méd. Lég.' 1848, 2, 229.)

5. *Test of Ploucquet.*—This so-called test for determining whether or not the act of respiration has taken place, was proposed many years since by M. Ploucquet. It is founded on a comparison of the absolute weight of the lungs with the weight of the body of a child. Admitting that the lungs increased in weight from the establishment of the respiratory process, it was supposed

that a like difference would take place in the relative weight of these organs to the body; and that the ratios thus procured, compared with certain averages, would enable a medical jurist to determine, in an unknown case, whether or not a child had breathed.

Ploucquet conceived that the average ratio of the weight of the lungs to the body in children which had not breathed, was 1 : 70; and in those which had breathed, 2 : 70 or 1 : 35. Subsequent researches, however, made by Chaussier and others have shown that these numbers cannot be considered to represent the true average. The most serious objection to the employment of this test in cases of infanticide, is, that the lungs and the body are liable to vary in their relative weights in children of the same age; and, *à fortiori*, this variation must exist to a greater extent among children which have reached different ages. There may be various degrees of development in the body of a child without any necessity existing for a corresponding development taking place in the lungs. It is unnecessary to enter into speculations relative to the causes: experience has shown that such variations really exist; and all that a medical jurist has to consider is, whether the differences can be reduced within limits which may make the test available in practice. M. Devergie states from his experiments that Ploucquet's test affords no satisfactory results when applied to the bodies of children that have not reached the eighth month of gestation. According to him, the ratio is, for the Eighth month—Before respiration, 1 : 63; after respiration, 1 : 37; Ninth month—Before respiration, 1 : 60; after respiration, 1 : 45. The ratio, he observes, becomes higher after respiration in proportion to the perfection with which the process has been carried on. ('Médecine Légale,' vol. 1, p. 556. See also 'Ann. d'Hyg.' 1835, 1, 485; 'Med. Gaz.' Nov. 1842, p. 208.) The facts which have been collected by different observers appear to me to show that Ploucquet's test is not fitted to determine, in an unknown case, whether a child has breathed or not.

6. *Blood in the pulmonary vessels.*—It has been asserted that if blood is found in the pulmonary vessels of a new-born child, we are justified in assuming that respiration has taken place. On the other hand, the absence of blood from these vessels has been considered to prove that a child has not breathed. This assertion must have originated in a want of correct observation. The pulmonary vessels contain blood, both in the child that has and in that which has not breathed. It is possible that the vessels may contain more after respiration than before; but in most cases of infanticide it would be difficult to found any distinction on a point of this nature. In examining the bodies of children that have died without breathing, and those of others that have lived and breathed for some time after birth, no perceptible difference was found in the quantity of blood existing in the vessels in the two cases. The fact is, the excess of blood after the establishment of respiration is distributed throughout the minute capillary system of the lungs: it does not remain in the large trunks. The state of the pulmonary vessels, therefore, furnishes no evidence either of respiration or the contrary. The same observation will apply to the presence of blood in the substance of the lungs. It is said that on cutting through lungs that have breathed the incisions are followed by a copious flow of blood; this, it is alleged, does not happen with lungs that have not breathed. In performing this experiment on the lungs of new-born children, I have not been able to perceive any well-marked difference in quantity, but the blood which escapes on pressure from lungs that have breathed is frothy. The blood may be found coagulated or not, and there is no difference in this condition, whether the child is born living or dead.

7. *Relative proportion of fat in the lungs.*—In July 1847, a memoir was presented to the Academy of Sciences by M. Guillot, in which the author proposed to determine the question of respiration by the relative proportion of

fat contained in the lungs before and after birth. According to M. Guillot, the quantity of fat contained in the pulmonary tissue is always greater before than after respiration, and it begins to diminish from the moment that the act of breathing commences. Before respiration, the dried lungs yield from 10 to 18 per cent. of fat; after respiration, not more than 6 per cent. The process followed by M. Guillot is to dry the organs at a high temperature, so as to expel all the water, reduce them to powder, and digest this powder in ether. ('Comptes Rendus,' Juillet 12, 1847, p. 777.) It need hardly be observed that this process could not be made available in practice. Admitting the facts as stated, the assigned difference between 6 and 10 per cent. may disappear by further observations. A want of chemical accuracy might lead to serious mistakes. The process, however, is open to this objection:—If respiration has been fully performed, this will be sufficiently evident from the state of the lungs; and if imperfectly performed, as the change is alleged to depend on the respiratory act, the result of an analysis would not remove the difficulty.

8. *The specific gravity of the lungs.*—The specific gravity of the lungs is greater before than after respiration; for although the organs become absolutely heavier by the establishment of the process, this is owing not to the air, but to the additional quantity of blood received into them. The air thus received so increases the volume of the lungs as to more than counteract the additional weight derived from the blood, and thus apparently to diminish their specific gravity. Under these circumstances they readily float on water. From several experiments, I have found that the specific gravity of the lungs before respiration, *i.e.* in the fœtal condition, varies from 1·04 to 1·05. They are about one-twentieth part heavier than their bulk of water. After respiration, the specific gravity of the lungs with the air contained in them I found in one experiment to be 0·94, *i.e.* the organs were about one-seventeenth part lighter than their bulk of water. The introduction of a small quantity of air will render these organs buoyant in water, and an alteration in the volume of the lungs sufficient for this purpose would not be perceptible to the eye. It will be understood that the specific gravity of the substance of the lungs is unchanged; the organs are rendered only apparently lighter by the air contained in their cells, on the same principle as a distended bladder. Hence it follows that the apparent diminution of specific gravity will take place whether the air be derived from respiration, artificial inflation, or putrefaction. It is on this property of the lungs that the application of what is termed the *hydrostatic test*, or the *docimasia pulmonaris*, is founded—a subject which may be appropriately considered in another chapter.

Conclusions.—The general conclusions which may be drawn from the contents of this chapter are:—

1. That a child may be born alive and be criminally destroyed before it has breathed.

2. That the presence of any marks of putrefaction in the uterus proves that the child must have come into the world dead.

3. That the characters accompanying certain marks of violence may occasionally show that the child was living when the violence was applied to it.

4. That there are no certain medical signs by which a child which has not breathed can be proved to have been living when it was maltreated.

5. That a new-born child may be destroyed by the prevention of respiration during delivery.

6. That the proof of respiration shows that the child has *breathed*, not that it has been *born alive*.

7. That by taking together the colour, volume, consistency, absolute weight, and buoyancy of the lungs, we may be able to draw an inference whether the child has or has not breathed.

8. That the lungs increase in weight according to the degree to which respiration is established, and not necessarily according to the period which the child has survived birth.

9. That no reliance can be placed upon the test of Ploucquet, or the proportionate weight of the lungs to the body.

10. That no reliance can be placed either upon the relative quantity of blood in the pulmonary vessels, or upon the relative proportion of fat contained in the pulmonary tissue, as evidence of respiration having been performed.

CHAPTER 75.

MODE OF EMPLOYING THE HYDROSTATIC TEST—INCORRECT INFERENCES—SINKING OF THE LUNGS FROM DISEASE OR ATELECTASIS—LIFE WITH PARTIAL DISTENSION OF THE LUNGS—LIFE WITH PERFECT ATELECTASIS OR ENTIRE ABSENCE OF AIR FROM THE LUNGS—ERRONEOUS MEDICAL INFERENCE FROM SINKING OF THE LUNGS—FLOATING OF THE LUNGS FROM EMPHYSEMA AND PUTREFACTION—EFFECTS OF PUTREFACTION IN AIR—GENERAL CONCLUSIONS.

Mode of employing the hydrostatic test.—The hydrostatic test has been long known, and various opinions have been entertained relative to its efficiency and value. Many of the objections that have been urged to its use appear to have arisen from a mistaken view of the evidence which it is capable of furnishing. The term 'test' is decidedly improper, since there are numerous cases in which it does not enable us to decide whether a new-born child has come into the world living or dead. It is, however, for the sake of convenience, here retained. When the hydrostatic test is properly applied, and with a full knowledge of the exceptions to which it is exposed, it will afford in many cases good evidence whether a child has or has not respired. The mode of performing the experiment is extremely simple. Having removed the lungs from the chest, they should be placed, still connected with the trachea and bronchi, upon the surface of distilled or river water. If they sink it should be noted whether the sinking takes place rapidly or slowly. If they both sink, the two lungs should be tried separately; for it is sometimes found that one, commonly the right, will float, while the other will sink. Supposing that both lungs sink, it will then be proper to divide each into twelve or fifteen pieces, and place these pieces separately on water. If, after this, they all sink, the inference is, that although the child may have lived and survived its birth, *there is no evidence of its having breathed.* On the other hand, the organs when placed on water may float: it should then be noticed whether they float high above the surface, or at or below the level of the water; sometimes they indifferently float or sink. These differences will lead to a conclusion respecting the degree to which respiration has taken place. It will now be proper to separate the lungs, and determine whether the buoyancy is due to one or both. Each lung should be divided, as before, and each piece separately tried. If all the pieces float, even after firm compression, we have good evidence, *cæteris paribus*, that respiration has been very perfectly performed. Should any of the divided portions sink in water, either before or after compression, our opinion should be modified accordingly. Some have recommended that the lungs should be placed on water with the heart and thymus gland attached; but there appears to be no good reason for this, since it is as easy to form an opinion of the degree of buoyancy possessed by the lungs, from the readiness

with which they float, as by observing whether or not they have the power of supporting these two organs.

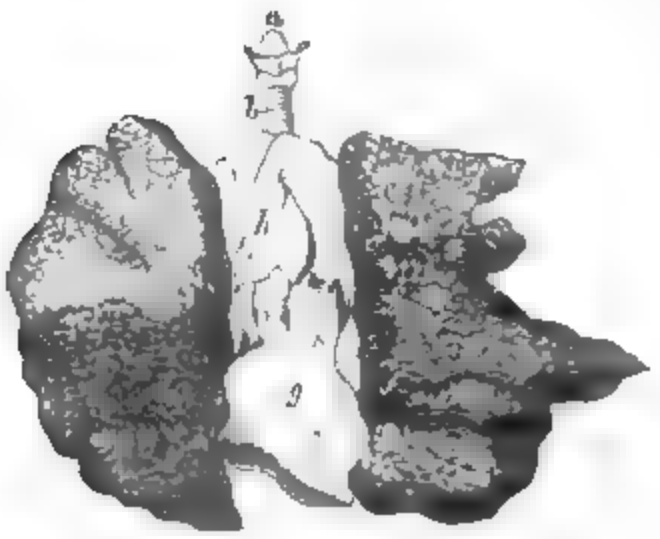
Such, then, is the method of employing the hydrostatic test in cases of infanticide. With regard to its use in medical jurisprudence, it should be observed that the floating of the lungs in water is not, as it is often incorrectly represented to be, a proof that a child has been *born alive*: nor is the fact of their sinking in water any proof that a child was *born dead*. The floating, under the limitations to be now described, proves only that a child has *breathed*; the sinking, either that it has *not breathed*, or breathed but imperfectly. The fact of a child having been *born* living or dead, has, strictly speaking, no relation to the employment of the hydrostatic test. There are, indeed, cases of infanticide which may be readily established without resorting to this test: all that the law requires is proof of a child having been born living—whether this proof be furnished by the state of the lungs through the hydrostatic test, or in any other manner, is of no moment. The signs of life are commonly sought for in the lungs, because it is in these organs that the changes produced by a new state of existence are first perceived: but this examination may be dispensed with, when the woman confesses that the child was born alive; when others have seen it manifest life by motion or otherwise after its birth; or, lastly, in cases where, without being seen, it has been heard to cry. The crying of a child has been admitted as evidence of live-birth on several trials for infanticide; although, as it is elsewhere stated, a child may utter a cry and die before its body is entirely born. Among the *objections* which have been urged to the employment of the hydrostatic test, we have first to consider those which concern the sinking of the lungs in water.

SINKING OF THE LUNGS FROM DISEASE OR ATELECTASIS.

It is said that the hydrostatic test cannot show whether a child has or has not survived its birth, because the lungs of children that have lived for a considerable period have been observed to sink entirely in water. In some instances this may depend on disease, tending to consolidate the air-cells, as *hepatization* or *scirrhus*—in others, on *œdema* or *congestion*; but these cases can create no difficulty, since the cause of the lungs sinking in water would be at once obvious on examination. The hepatized portion of lung may be known by the firmness with which it resists cutting with the knife, as also by the fact that it is impossible to distend it artificially with air. On the other hand, there are cases in which the lungs appear healthy and unaffected; all that we can perceive is, that they retain their fœtal condition. This is a very different state from that of hepatization, because the lungs may, in this case, be made to receive air by artificial inflation. It is remarkable that life should continue for many hours, and sometimes even for days, under such a condition; but the occasional existence of this state of the organs in a living child is placed beyond all dispute; the explanation of the causes upon which it depends—how it is that a child may live and breathe for hours or days, and no signs of respiration are discovered in its body after death, is, however, involved in great difficulty. The researches of Dr. E. Jörg, of Leipzig, have thrown some light upon the subject: and these may probably lead the way to other discoveries in this obscure department of physiology. Some of Dr. Jörg's views are peculiar. He considers that the act of parturition, as well as the duration of the process, has a material influence upon the system of a child; and that these conditions serve to prepare it for the efforts which it has to make in performing respiration. ('Die Fötuslunge,' Grimma, 1835.) Supposing the first inspiration made by a child to be, from any cause, feeble or imperfect, then the organs will become only partially distended; the remaining portions will preserve their fœtal con-

dition. Dr. Jörg considers this as a positively diseased state of the lungs in the new-born child, and he has given it the name of *atelectasis* (ἀτελής, 'incomplete;' ἔκτασις, 'expansion'). It may proceed from various causes. He considers that children that are born after an easy and rapid delivery are subject to it; and thus it may be found in a mature, as well as in an immature child. Any cause which much weakens the vital powers of a child before its actual birth may give rise to the occurrence of this imperfect expansion of the lungs. In this way it may be due to long-continued pressure on the head during delivery, or to bleeding from the cord. All the causes of asphyxia in a new-born child will, when operating only in a slight degree, also produce this atelectasic condition. A part of the lung is, in the first instance, distended with air, but the child may not have sufficient strength to fill the remaining portions; it may thus live on for some hours or days, respiring at intervals, and becoming occasionally convulsed, in which state it will probably sink exhausted and die. Jorg has remarked, that those portions of the lung which are not speedily distended with air become afterwards consolidated or hepatized, so that all traces of their cellular structure are lost. The length of time which a child survives will depend upon the degree to which its lungs have become dilated. This condition of the lungs is sometimes to be clearly traced to the diversion of the blood from these organs, by reason of the ductus arteriosus or foramen ovale remaining open after birth.

Fig. 154.



Atelectasis of the lungs in a new-born child, from Jörg.

a b Larynx and wind-pipe. *c* The right lung, the upper and lighter portion containing air. *d* The darker and lower portion in a state of atelectasis (uninflated). *e* The left lung. *f* A portion of this lung in a state of atelectasis with small patches of a lighter shade which have received air. *g* The heart. *h* The thymus gland. *i* The aorta. *k* The pulmonary artery.

Life with partial distension of the lungs.—It is not necessary that the whole of the lungs should have received air in order that a child should continue to live even for several months after its birth. Some years since, I met with the following case, which will serve to illustrate this statement. A child aged six months had been, it was supposed, destroyed by suffocation. Upon opening the chest, the viscera were found healthy; but the whole of the inferior lobe of the right lung was, so far as regarded colour, density, and structure, precisely like the lungs of a fœtus, no air having ever penetrated into it. It had become developed in size, but its cellular structure was perfectly destroyed. When the whole of the lung was placed in water, it floated; but when the inferior lobe was separated, it immediately sank to the bottom of the vessel. I have no doubt that this was a case of partial atelectasis, such as it is described by Jörg. This portion of the lung had not received air in the first instance; and it had become afterwards consolidated or hepatized, so that it could not be inflated. The illustration (fig. 154) represents the condition of the lungs described by Jörg under the name of atelectasis. In a case which occurred in January 1859, communicated to me by Dr. Burke Ryan, a child aged five weeks died suddenly, and its death was attributed to an opiate, although the circumstances rendered it highly improbable that the child had died from poison. The body was examined for a coroner's inquest: it was in good condition. The lungs were found lying at the back part of the chest, inelastic, and presenting no crepitation in any part. They had the usual appearance of the unexpanded lungs of the fœtus. They weighed 1,080 grains. They sank

in water, and when divided into many pieces no portion of them floated. It was difficult to inflate them, and the portions inflated readily lost the air by compression and sank. The microscope showed an absence of cellular structure. It is surprising how the child could have lived so many weeks with this state of the lungs; it is obvious that under such circumstances a very slight obstruction to respiration would suffice to account for its sudden death. ('Lancet,' 1868, 1, p. 810.)

Dr. Albert met with a case, in which a child died *thirty-six hours* after its birth, having been attacked by convulsions at intervals during that time. On inspection the whole of the right and the lower portion of the left lung were found to be in their fœtal condition, and they immediately sank when immersed in water. There was no diseased appearance in the organs, and the undistended portions were easily filled by blowing air into them. This, indeed, is the test of this condition. The lungs are not diseased, but simply unexpanded. (Henke's 'Zeitschrift,' 1837, 2, 422.) M. Dépaul found that in many cases in which children had died suddenly after breathing for several hours or days, there was no other morbid appearance to be perceived than an unexpanded condition of a large portion of the lungs. ('Med. Gaz.' vol. 39, p. 283.)

Life with perfect atelectasis, or entire absence of air from the lungs.—It is quite necessary for a medical jurist to be aware that this state of the lungs, which is here called *atelectasis*, is by no means unfrequent among new-born children, although attention has been only of late years drawn to the subject. When no portion of air is found in the lungs of a child, there is no test by which such a case can be distinguished from one in which the child has come into the world dead. These cases of atelectasis are ordinarily set down as exceptions to a general rule; but the numerous cases subjoined will show that they are more common than some medical jurists are inclined to admit. In examining the body of a child, the history of which is unknown, it is proper that the possible occurrence of these cases should be well borne in mind. It appears to me not improbable that many such come yearly before coroners in this country; and that they are dismissed as cases of still-born children, notwithstanding that marks of murderous violence are often found upon the bodies. If, as it has been already observed, the lungs sink in water, this fact alone is commonly regarded by a medical man as sufficient evidence of still-birth. This is assuredly putting an incorrect interpretation on the facts, and it may throw obstacles in the way of a judicial enquiry, and lead to the concealment of crime. Professor Bernt met with an instance in which a seven-months child died *two hours* after birth; and when its lungs were divided and placed in water, every fragment sank. Remer has reported a case, in which the lungs sank in water, both entire as well as when divided, although the child had survived its birth at least *four days*. (Henke, 'Lehrbuch der G. M.' p. 374.) In this case the navel-string separated naturally before death. Orfila found, in a child which had lived *eleven hours*, every portion of the lungs when divided, to sink on immersion. In three other instances, in which the children survived birth four, six, and ten hours, the lungs also sank when divided; two of these were mature. ('Méd. Lég.' vol. 1, p. 375.)

Dr. Vernon attended a healthy woman, who was delivered of a child at about the *sixth month* of her pregnancy. The child was born before his arrival, and he heard it crying strongly from under the bed-clothes as he entered the room. After removal from the mother, the child cried at intervals, and it was observed that its chest rose and fell as in ordinary breathing. It lived five hours, and it then appeared to die from feebleness and exhaustion. It was a female child, and very small; the body weighed 2 lbs. 13 oz., and its length was 12¾ inches; the eyelids were adherent. The lungs were of a

purplish-red colour, and slightly overlapped the bag of the heart: they sank in water both entire and when divided into small pieces; they were not crepitant, and broke down under firm compression; there was no appearance of air-cells in a section of the lungs when examined by the microscope. The ductus arteriosus and foramen ovale were in their fœtal state. ('Lancet,' Feb. 3, 1855, p. 121.) In these cases the respiration is what is called bronchial, or confined to the upper part of the air-passages. The following is another instance of atelectasis. The child was born prematurely at the *seventh month*, and cried strongly. The breathing became slower and slower, until the death of the child, four hours after birth; but during this time it cried at intervals. The head and face were livid, and remained so after death. The heart continued to beat after respiration had ceased. The blood on inspection was found fluid and black; the lungs were of a dark colour like the liver, and they sank in water even after an attempt had been made to inflate them with a blowpipe. ('Med. Times and Gaz.' May 23, 1857, p. 523.) Metzger supposed that premature children alone were likely to present this anomaly—*i.e.* of continuing to live after birth without leaving any clear signs of respiration in their lungs, but in children born at the full time the lungs may present the same condition.

Dr. Strohl remarks that it is not disputed that a child which has breathed has lived; but he asks how has it come to pass that when there is no air in the lungs the child is pronounced *not* to have lived. This doctrine is false in principle and in its applications, and at the same time disastrous in its consequences. Thus the legal authorities, in place of asking whether a child has lived at its birth, ask whether it has breathed. If a negative answer is returned, the case is at once set aside, and as an act of murder cannot be perpetrated on a dead body, anyone charged with the murder of the child must be acquitted. ('Ann. d'Hyg.' 1867, 2, 220.)

It is strange that some medico-legal writers, in dealing with this subject, should ignore these facts. Thus Dr. Senator, a German medical jurist, lays down the proposition that, in a question of infanticide, respiration and life are convertible terms, and that every child should be considered as having lived *after* birth, or been born alive, when it is proved that it has breathed. (Horn's 'Vierteljahrsschrift,' 1866, 1, 99.) Even in assuming this to be true, it does not follow that when the proof of breathing fails, the child has been born dead. The following cases are recorded by two eminent observers. Dr. Donders, of Utrecht, made a post-mortem examination of the body of a child for one of his lectures on Forensic Medicine. The lungs were of a uniformly brown colour, placed rather on the side of the chest, with their edges superiorly. They both sank in water; the right was readily inflated; the left was cut into pieces, during which process no crepitation was heard or felt, and each piece sank in water. A knife passed with light pressure over the section expressed only a little reddish-coloured fluid. The bladder was empty. There was no meconium in the large intestines. There was no food in the stomach. The conclusion was—immature child of about seven months, still-born, which did not remain in the uterus, or only for a short time after death; only a short time dead.

The error of this conclusion was subsequently demonstrated by the ascertained facts of the case. The child at its birth gave but slight signs of life, but on the employment of the ordinary means, it soon began to cry in the usual way. For some hours it lay quietly moaning. In the evening it had a bluish colour, but became more lively on the application of warmth. It soon grew cold and rigid, and died *twelve hours* after its birth. Prof. Donders refers to another case, which occurred to Prof. Thomas, of Leyden, shortly before. The child was immature, cried strongly at birth and later; subsequently it

only moaned, had a warm bath which roused it, but it ultimately died in *seventeen hours* after birth. After death the lungs were found in the state in which they are usually met with in children that have not breathed perfectly. ('Report' by Dr. Moore, 'Medical Press,' Nov. 22, 1865, p. 457.)

Dr. Schwörer, of Freiburg, delivered a woman in the hospital. The child did not breathe when born, but showed some signs of life. Thus the pulsation of the heart and umbilical cord were perceptible. These gradually ceased, and no effort could restore the child. On inspection, the lungs were found to contain no air; there was no crepitation when the substance of the lungs was cut, and they sank in water, not only in the entire state, but when divided into numerous pieces. M. Poncet produced before the Lyons Medical Society (Oct. 1871) the lungs of a fœtus, prematurely born at the Hôtel-Dieu. The child had cried, breathed, and lived an extra-uterine life for *ten hours*, but the lungs sank completely in water as if no respiration had taken place. ('Lancet,' 1872, 1, 227.)

These cases distinctly show the erroneous conclusions to which medical jurists may be led in relying upon the absence of air from the lungs, and their sinking in water, as positive evidence that a child was born dead. They also demonstrate the fallacy of those medical opinions which have been given by some experts in civil cases, involving questions connected with live birth, inheritance, and tenancy by courtesy. (See pp. 208, 212, 215, *ante*.) Looking to the condition of the lungs alone, it is obvious that many children would be pronounced dead, who were not only living when born, but had survived their birth many hours. Such a life, although not indicated by those changes in the lungs which are brought about by active respiration, must still be called extra-uterine.

In July 1849, Mr. Hurd, of Frome, attended a woman who gave birth to a female child, as she believed, in the eighteenth week of her pregnancy. The child was supposed to be dead and placed aside. Some time afterwards Mr. Hurd's attention was called to it by some of the attendants, who had observed convulsive movements of the body. These continued for half an hour, and the action of the heart was evident to the eye from the pulsation it communicated to the chest as well as to the hand. There was no visible respiration at any time, but there could be no reasonable doubt that this child was *born alive*. In October 1852, in attending another woman, Mr. Hurd noticed that the navel-string ceased to pulsate eight minutes before entire delivery. The child was born apparently dead: it was corpse-like in appearance, and its limbs were flaccid. By the aid of a hot bath, and inflation of the lungs continued for twenty minutes, the lips acquired a slight colour, and there was a feeble sigh. After the inflation had been continued for three-quarters of an hour, the lips and face became more tinged, and respiration was established. This case clearly shows that the act of respiration is not necessary to the presence of life in new-born children. Any physician insisting on this proof would have pronounced this child to have been still-born or dead, thirty minutes after its birth, and have given a certificate accordingly; while after forty-five minutes he would have been equally prepared to give a certificate that the same child was born alive! (See LIVE BIRTH, *ante*. p. 209.) The child was alive and well at the time the case was published, *i.e.* nine years after the birth. There can be no doubt that from this erroneous doctrine respecting the necessity of evidence of *respiration* at birth as a proof of life, some children are consigned to certain death, when by the application of proper means the latent might have been converted into active life. On the other hand, living children whose lungs may have been found to sink in water have, no doubt, been criminally destroyed. Dr. Hicks has shown that a child may be born living without breathing, simply owing to spasm of the larynx and retraction of the tongue.

If anyone is at hand to adopt proper treatment, the child may be able to breathe and then continue to live. Where a woman is delivered in secrecy this assistance could not be rendered, and the child would die. Those who rely for proofs of life on the presence of air in the lungs, would of course pronounce such a child to have been born dead. The cases which have occurred to Dr. Hicks show that this would be a false conclusion. He has on several occasions seen a new-born infant make attempts at inspiration, but owing to the cause above-mentioned these efforts were ineffectual. In one case to which he especially refers, he lifted up the epiglottis by pressing upwards and forwards the root of the tongue: the air then entered easily, and the child was saved. ('Guy's Hosp. Reports,' 1866, p. 476.) Dr. Hicks properly remarks on this case, that 'those who consider respiration to be necessary to establish the true life of the new-born infant, must admit also that under these conditions a child cannot be considered as a living one, notwithstanding the heart is beating, that the attempts at inspiration are indisputable, and that the child is separate from the mother. On the other hand, under these circumstances, a child wholly born might be murdered, and yet there would be no evidence of inflation of the lungs to prove live birth' (loc. cit.). In the absence of marks of violence cases of this kind could not involve a woman in a charge of murder. The non-establishment of respiration, and death subsequent to birth, would be the result of an unforeseen accident.

A case occurred to Dr. Burke Ryan in which a fœtus, born at the fifth month of uterine life, performed respiration feebly and at intervals for about twenty-eight minutes. The child, which weighed only one pound and three-quarters, uttered no sound. The only evidence of life was in the action of the heart and the maintenance of the placental circulation. The latter gradually got weaker, and the moment it ceased, life appeared to be extinct. The entire lungs sank in water. When cut into pieces, only two small portions from the right lung floated.

It is a curious fact that, in some instances, life may be indicated by the action of the heart, when owing to some accident the lungs cannot act. Efforts at respiration may be made, but the lungs will be found to contain no air. Mr. Cann of Dawlish (a former pupil) met with the following case of breech-presentation, in which the child appeared to breathe before its head was born. As the head was large, considerable force was required in order to remove it. Artificial respiration was resorted to for twenty minutes after its birth, and, although the beating of the heart was felt during sixteen minutes of that time, no breathing occurred. On inspection, it was found that the vertebræ of the neck were dislocated, and there was great effusion of blood around the spinal cord. The lungs were of a bluish-grey colour, as in the fœtal state. They were not crepitating, and did not float on water.

I may add to these instances two which have occurred under my own observation. In one, the case of a mature male child, the lungs sank in water, although the child had survived birth for a period of *six hours*. In the other, a female child survived *twenty-four hours*; and after death the lungs were divided into thirty pieces; but not a single piece floated; showing therefore that, although life had been thus protracted, not one-thirtieth part of the structure of the lungs had received from respiration, sufficient air to render it buoyant. ('Guy's Hospital Reports,' No. V. p. 355.) In the latter instance no particular remark was made during life respecting the breathing of the child. These cases show most clearly that buoyancy of the lungs is not a necessary consequence of a child having lived and breathed for some hours after birth. Probably, had this been a case calling for medico-legal inquiry, the lungs would have been cut to pieces; the sinking of the divided pieces in water, either *before or after* compression, would have been set down as negativing the act

of respiration, and, unless other strong evidence had been forthcoming—the fact of the child having survived its birth. Here, again, we perceive the necessity of not hastily assuming that a child had been *born dead* because its lungs *sink* in water. There may be no good medical evidence of such a child having lived after birth, but assuredly, with these facts before us, the mere sinking does not warrant the common and positive dictum, that the child was necessarily dead when born; it would be as reasonable to pronounce, in a question of poisoning, that the fact of an individual having died from poison was negatived by the non-discovery of a poisonous substance in the stomach of the deceased.

M. Budin has added to the number already collected two well-marked cases, showing that a child may live and breathe, and yet the lungs may preserve their fœtal characters. In August 1871, a woman was delivered of a child at six months and a-half of utero-gestation. The child was weakly, it breathed and cried occasionally, but in a feeble tone, and survived its birth thirty-eight hours. The lungs had all the usual fœtal characters in situation and colour. When placed on water they sank entire, and when divided into small pieces. On compressing the cut portions under water, there was no crepitation, and a few very small bubbles of air escaped. In the second case the facts were precisely similar, but the child lived only four hours. The air had not penetrated beyond the bronchi and their ramifications. ('Ann. d'Hyg.' 1872, 2, 181.) Other cases are referred to in this volume, all tending to show that there may be a certain amount of respiration which the hydrostatic test will not indicate, the amount of air taken into the bronchial tubes not being sufficient to give buoyancy to any portion of the lungs. In all these cases, the children were feeble and immature; they had not the power to distend the air-cells of the lungs. Still they were *living* children. The only facts which indicated that breathing had taken place, in the opinion of M. Budin, were the escape of a sero-sanguinolent liquid, with minute bubbles of air, when a section of the lung was compressed in air, and the escape of similar bubbles when the cut portion of lung was compressed under water. As, however, there was no crepitation on pressure, the air which thus escaped could hardly have been in the substance of the lung, but was most probably derived from the surface. Its presence, therefore, proved nothing on which reliance could be placed.

Hydrostatic test not applicable to such cases.—It must be apparent, on reflection, that cases of this description are beyond the reach of the hydrostatic as well as of all other tests applied to the respiratory organs, because the lungs do not receive and retain a sufficient quantity of air to give buoyancy after death, although the children may have lived some hours. The hydrostatic test is no more capable of showing that such children as these have lived than it is of indicating from what cause they have died. Facts of this kind demonstrate that a passive existence may be for some time maintained under a state of the respiratory process not to be discovered after death. In the opinion of some, these cases form a serious objection to the hydrostatic test; but it is difficult to understand how they can affect its general application—or why, because signs of respiration do not always exist in the lungs of children that have lived, we are not to rely upon them when they are actually found. Poison is not always discoverable after death in the stomach of a person who has taken it; but this does not prevent a medical jurist from searching for it, and, under proper precautions, relying upon its discovery as evidence of poisoning in another case. These singular instances prove that we are greatly in want of some fact to indicate life after birth, *when the signs of respiration are absent.* Until we discover this we must, of course, make the best use of that knowledge which lies at our disposal; taking care to apply it to those cases alone to which experience shows it to be safely adapted. In the meantime, the common infer-

ence, that a child has been born dead because its lungs sink in water, is never likely to implicate an innocent person; it can only operate by sometimes leading to the liberation of the guilty.

Erroneous medical evidence from sinking of the lungs.—From the numerous cases reported, it is a fair subject of consideration whether a great error is not committed by those medical practitioners who pronounce children to have been born dead, merely because the lungs contain no air and readily sink when placed on water. This, it is true, is the common opinion, but it is not warranted by observation. We are only entitled to say, in all such cases, that there is *no evidence* of a child having breathed or lived. Many might be disposed to consider it an unnecessary degree of refinement to hesitate to express an opinion that a child was born dead when its lungs sank entirely in water, because certain cases have occurred wherein these characters have been possessed by lungs taken from the bodies of children that have survived their birth many hours. To those inclined to adopt this view I would say, the answer to such a question is of far greater importance in a medico-legal than in a medical point of view. In the latter case, no responsibility can be attached to the expression of the opinion commonly adopted; in the former case, however, when the question refers to child-murder, a serious responsibility is incurred by a medical man, and he can only guard himself from unpleasant consequences by basing his evidence on carefully observed facts. If a child can live for six or twenty-four hours without receiving into its lungs sufficient air to allow even one-thirtieth part of their substance to float, it is clear that such a child may be the subject of a murderous assault; and if a medical practitioner, losing sight of this fact, should declare, from the lungs sinking in water, that the child *must* have been *born dead*, his assertion may afterwards be contradicted, either by circumstances, by the testimony of eyewitnesses, or by the confession of the woman herself. He will be required, perhaps, to revise his opinion; and he will then find that the fact of the lungs sinking in water is rather a want of evidence of life after birth, than a positive proof of a child having been born dead. It cannot be denied that the sinking of the lungs is a strong *presumption* in favour of still-birth, but it is nothing more;—it is not, as it is often set down, a direct or positive *proof* of the child having been born *dead*. There are many cases reported which show that this is not an unnecessary caution. Meckel relates two instances in which the lungs sank in water, but the women respectively confessed that they had destroyed their children: according to the general rule, these children must have been born dead, and murder could not have been committed! ('Gerichtl. Med.' p. 365.) For other examples of a similar kind I must refer to the following journals: 'Ann. d'Hyg.' 1837, 1, 437; also, 1841, p. 429; Henke's 'Zeitschrift,' 1840, vol. 27; 'Erg. H.'; 'Brit. and For. Med. Rev.' Jan. 1842, p. 250. The cases there reported appear to me to convey a warning to medical witnesses on the danger of expressing an opinion not strictly warranted by medical facts, and which must be in such cases merely speculative.

A case of some interest in this point of view was communicated to the 'Medical Gazette' by Dr. Davies, of Hertford. In November 1847 he was required to examine the body of a child found under suspicious circumstances. Its body was in a pasteboard-box of small size, with the lid turned inside out, and on the top there was a quantity of mould. The body was found buried in a garden. It appeared on inquiry that there had not been exactly a concealment of birth on the part of the mother, who was an unmarried woman. The body was thirteen inches long from crown to sole; the eyelids were adherent; the testicles (it was a male child) had not descended; its body weighed one pound and three-quarters. It was ascertained that it had been buried a fortnight, which accounted in some degree for the lightness of its weight in pro-

portion to its length, and for a slight separation of the cuticle from some parts of the arms: the body looked otherwise healthy. The uterine age was probably about seven months. On examining the lungs, they were found to be quite firm, like the liver; *they sank in water, both wholly and in parts.* The right lung was of a dark brown mahogany colour, but the upper lobe of the left was of rather a lighter colour than any other part of the lungs. However, this lobe sank immediately upon being placed in water. The evidence at the inquest proved that the child was not only *born alive*, but that it had lived *ten minutes* at least, and perhaps longer, after birth. It appears that an elderly woman, living close by, was sent for, and when she arrived she found the child, with the placenta attached to it, in the close-stool. She noticed that the child moved its arms; she therefore took it up with the placenta, and wrapped it in flannel. It continued to move its lips for *ten minutes*, according to her account, but it uttered no cry. When the child ceased to move, she divided the cord seven inches from the body, and tied it into a knot. ('Med. Gaz.' vol. 40, p. 1022.)

It has been recommended that medical jurists should consider as *dead* every child that has not breathed, *i.e. whose lungs sink in water*; but they who give this advice at the same time admit that children may come into the world living without breathing, and the law holds, under the decision of its expounders, that respiration is only *one*, and not an exclusive proof, of life. In order to establish life, or even live-birth, respiration need not always be proved, either in civil or criminal cases (p. 208 *ante*). A medical jurist would, therefore, be no more justified in asserting that all such children were necessarily born dead, than that they were born living; and in stating what is the plain and obvious truth, it is not possible that his statement can ever be the means of involving an innocent person. It is certain, however, in departing from the truth, and stating what is contrary to well-known facts, that when the lungs of a child sink in water, it is safe and just to consider such child as having been born *dead*, he is incurring the risk of exculpating a really guilty person; for it cannot be too strongly borne in mind, that a woman is not now charged with murder, merely because the lungs of her child float or sink in water, but because there are upon its body marks of violent injuries apparently sufficient to account for the death of a new-born child, or there are strong moral presumptions of her guilt. (See 'Ann. d'Hyg.' 1836, 2, 362.) But there is another aspect in which this question should be viewed. There may be no marks of murderous violence on the body of the child, nor any proofs of ill-treatment, yet a child born under these circumstances may have died through the culpable neglect or reckless indifference of the woman. Dr. Moore, of Dublin, in reporting two cases of atelectasis, in one of which a child had survived its birth twelve hours, remarks that when such a child is deserted or exposed, without the necessary attention required for its helpless condition, the conditions are precisely fulfilled to cause its death within a few hours under a diminution of temperature and a total expulsion of air from the lungs. He has no doubt that many a child so found, which had met with its death through want of care, is looked upon as not having lived. ('The Medical Press,' Nov. 22, 1865, p. 458.) It will be seen hereafter that some of our judges have recently given a strong exposition of the law, so as to bring all cases of this description within the crime of manslaughter.

FLOATING OF THE LUNGS FROM OTHER CAUSES THAN RESPIRATION.

Another series of objections has been urged to the hydrostatic test, based on the fact that the lungs may receive air and acquire buoyancy from other causes than respiration. These causes are two: putrefaction and artificial

inflation. It was supposed that the lungs of a still-born child might receive air or become emphysematous from a compression of the sides of the chest during delivery; but it is difficult to understand how in this way air should enter these organs as a result of pressure. The truth probably is, that what has been described as *emphysema* of the lungs in still-born children was nothing more than partial or imperfect respiration performed during a protracted delivery. In examining the bodies of many still-born children, I have never met with any appearance resembling what has been described as a state of emphysema independently of respiration and putrefaction. It may be proper, however, to state that, according to some observers, emphysema of the lungs may be produced under the following circumstances:—the thorax of the child is compressed in passing the outlet; the lungs within are thereby compressed, and if this compressing force be suddenly removed, as by the passage of the thorax, the elasticity of the parietes will cause the chest to expand, and air, it is presumed, will then enter as a necessary consequence by aspiration. The simultaneous compression of the abdomen might aid in the entrance of the air. ('Lancet,' May 20, 1837; also June 17, 1837.) It is contended that not only may respiration take place during birth, but that even the lungs of a *dead* fœtus may become thus mechanically inflated, and respiration be thereby simulated.

This opinion appears to be founded on an erroneous view of the condition of the thoracic viscera in the chest. The lungs, before air has entered into them, are as dense as the liver. If they are compressed, they may become elongated, but when that pressure is removed, they will, if the child be dead, simply return to their original fœtal condition. To suppose that they would expand and receive air, is to suppose that the reaction of the thoracic parietes is greater than the force with which they have been compressed. But what is to carry the thorax of a dead child beyond the point at which equilibrium is restored? Besides, this would not suffice to distend the air-cells, which are yet coiled up, as it were, and condensed. If this theory were correct, scarcely a child would be born without having air in its lungs. In experimenting on this subject, I have never observed the least portion of air to enter: the air-cells of the lungs do not, therefore, appear to be in the condition of compressed spiral strings, which such a theory would represent.

Floating of the lungs from putrefaction.—The lungs of a still-born child, when allowed to remain in the thorax, are slow in undergoing putrefaction; but, nevertheless, they sooner or later acquire sufficient air to render them buoyant in water. This form of gaseous putrefaction may even take place in the lungs of a child which has died in utero. One instance of the kind is recorded by Dr. Albert (Henke's 'Zeitschrift,' 1837, 2, 179), in which the child was cut out of the uterus in a putrefied state, and its lungs floated when placed on water. It has been also alleged, that the formation of air may take place in the lungs from putrefaction, and not be indicated by change in colour, smell, or other properties of the organs; but, admitting that this may occur, it can create no difficulty in the investigation.

When the lungs are putrefied, this will be determined, in general, by putrefaction having extended throughout to all the soft parts of the body. The organs, according to the degree of putrefaction, will be found soft, of a dark green or brown colour, and of a highly offensive odour; the serous membrane covering the surface will be raised in large visible bladders, from which the air may be forced out by very moderate compression. It has been remarked that, under the same conditions, gaseous putrefaction takes place as rapidly in the liver, heart, and thymus-gland of a new-born child as in the lungs. We should, therefore, examine the general condition of these organs and the body. The *distension of the lungs* with gas from putrefaction cannot be easily overlooked

or mistaken for the air of respiration. The answer to any objection founded on the putrefied state of these organs must at once suggest itself. It is impossible that any well-informed medical witness can expect to obtain satisfactory evidence from experiments on lungs in such a condition. He should at once abandon the case, and declare that in regard to the question of respiration, medical evidence cannot establish either the affirmative or the negative. The fact of his not being able to give the evidence required, cannot be imputed as a matter of blame to him; because this is due to circumstances over which he has no control. In a case of poisoning, the appearances after death in the viscera may be entirely destroyed by putrefaction; but no practitioner would think of looking for proofs when the circumstances rendered it utterly impossible for him to obtain them.

The danger of placing any reliance upon the results obtained from lungs which are decomposed, is illustrated by a case reported to the Medico-Legal Society of Paris, by M. Douillard, Nov. 1871. Dr. Fajole examined the body of a new-born child, which was found on the banks of a river, partly immersed in water. The child was mature. The body was much decomposed; there were many wounds and fractures about it, but it was impossible to say whether these injuries had been produced before or after death. According to the evidence, the body of the child had been exposed six weeks. The hydrostatic test was applied. The organs of the chest, including the lungs, floated on water, and each lung floated separately. There was no appearance of air-vesicles, as in putrefaction, and when the structure of the lungs was broken up by compression, there was no crepitation, and the organs (entire) still floated on water. On these grounds, Dr. Fajole concluded that the air contained in the lungs was not owing to putrefaction, and that the child had breathed. On the next day the lungs were re-examined by Dr. Fajole and another physician. To the surprise of both, when the lungs were placed on water they sank. This difference in the results required explanation.

From some experiments on the lungs of rabbits, Dr. Fajole still concluded that the air in the lungs was not derived from putrefaction. The matter was referred to the Medico-Legal Society of Paris, and they came to the conclusion, 1st, that it was probable, but not certain, that this child had breathed; and, 2nd, that the conflicting results obtained from the hydrostatic test were owing to the structure of the lungs being broken up and the escape of the air, as the result of the imbibition of water between the two trials to which they were submitted ('Ann. d'Hyg.' 1872, 1, 204 and 409). In a case like this it would have been more prudent to have placed no reliance upon experiments with putrefied lungs. After six weeks' exposure in water, there was a great probability of error accruing from putrefaction of the organs. The floating was probably caused by some small bubbles of air remaining in the lungs, as they were not cut into small pieces before compression. After all, the conclusion drawn by the reporter to the Society was too vague and indefinite for an English court of law. It is not probability, but certainty, which is required for medical evidence in a case of child-murder. The case teaches us to avoid drawing any inferences from experiments on putrefied lungs. They are as likely to be wrong as right.

A case may possibly occur wherein the characters presented by the lungs will be such as to create some doubt whether the buoyancy of the organs is due to putrefaction or respiration, or, what is not unusual, whether the putrefied lungs may not also have undergone the changes produced by respiration. The facts may be apparently explicable on either assumption. Other facts, under a proper investigation, may serve to remove any doubt. (See case by Dr. Francis, 'Med. Gaz.' vol. 37, p. 460; also Casper's 'Vierteljahrsschrift,' 1864, 2, 37.) In one or two *instances which* have come to my knowledge, there has been on the

part of medical men a disposition to pass beyond the line of safety, and to draw the same inferences of respiration from putrefied lungs, as would be correctly drawn from those which are recent. The gases of putrefaction are generally distributed in large and superficial bladders beneath the pleural membrane. The gases themselves have an offensive odour. The air of respiration may be seen in the minute cells of the lungs, either by the eye or with the aid of a lens; but it is proper when the lungs are clearly putrefied not to strain medical evidence too far. The case should be allowed to fail for want of evidence rather than receive a factitious support from medical opinions based upon an examination of lungs in this condition. These remarks apply only to lungs on which experiments are made in order to determine the fact of breathing. The body may be putrefied, but the lungs may not share in this condition. In this case the results of experiments might be admissible as evidence.

It has been recommended on these occasions that the witness should lean to the side of the prisoner—in other words, he should give an opinion, that the child suspected to have been murdered had not breathed. This advice is equal to recommending a witness to take upon himself the duty of a jury, and virtually to acquit a prisoner upon a doubt existing in his own mind, in respect to only *one* portion of the evidence adduced against her. The evil effects of following this kind of advice are well shown by a case reported in Henke's 'Zeitschrift' (1843, 1, p. 102, Erg. H.), in which an opinion was improperly given by a medical witness, that the child, the whole of the organs in whose body were in an advanced state of putrefaction, was born *dead*; and the prisoner afterwards confessed that it had been born *living*! This shows that it is always better to leave a doubtful case as we find it, than to express a positive opinion on one side or the other, when this opinion can never amount to more than a conjecture. If a witness were simply to assure a jury, that medical evidence could not solve the question whether the child had lived or not—if he were to assert, what is really the fact, that his experiments would not allow him to say whether the child had or had not breathed—it is certain that no innocent person would ever be convicted or a guilty person acquitted, upon his evidence. It is for a jury only to judge of guilt from *all* the circumstances laid before them; but it is assuredly not for a medical witness to prevent further investigation, and put an end to the case, by leaning to the side of the accused when there is really a doubt upon his mind. It is his duty to state that doubt, and leave the decision of guilt or innocence in the hands of the Court.

Conclusions.—The general conclusions which may be drawn from the contents of this chapter, respecting the application of the hydrostatic test in cases of infanticide, are the following:—

1. That the hydrostatic test can only show whether a child has or has not breathed—it does not enable us to determine whether a child has been born living or dead.

2. That the lungs of children that have lived after birth may *sink* in water, owing to their not having received air, or to their being in a diseased condition.

3. That a child may live for a considerable period when only a portion of the lungs has been penetrated by air.

4. That a child may survive birth, even for twenty-four hours, when no part of its lungs has been penetrated by air.

5. Hence the sinking of the lungs (whether whole or divided) in water is not a proof that a child has been *born dead.*

6. That the lungs of children which have not breathed and have been born dead may float in water from putrefaction or artificial inflation.

7. That the lungs as situated in the chest undergo putrefaction very slowly —that, if but slightly putrefied, the air may be easily forced out by compression, and if much putrefied, either the case must be abandoned, or other *urces of evidence sought* for.

CHAPTER 76.

FLOATING OF THE LUNGS FROM ARTIFICIAL INFLATION—INFLATION DISTINGUISHED FROM PERFECT RESPIRATION—NOT DISTINGUISHABLE FROM IMPERFECT RESPIRATION—DOUBTFUL CASES—RESULTS OF COMPRESSION—IMPROPER OBJECTIONS TO THE HYDROSTATIC TEST—SUMMARY—RESPIRATION BEFORE BIRTH—VAGITUS UTERINUS—RESPIRATION A SIGN OF LIFE NOT OF LIVE-BIRTH—THE KILLING OF CHILDREN WHICH BREATHE DURING BIRTH NOT CHILD-MURDER—GENERAL CONCLUSIONS.

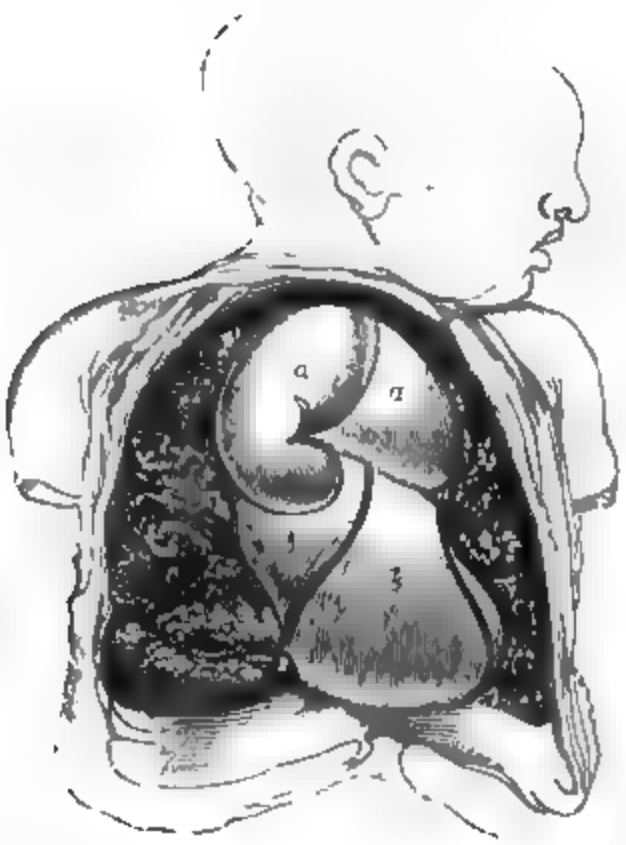
Floating of the lungs from artificial inflation.—It has been alleged that the lungs of a still-born child may be made to assume, by artificial inflation, all the characters assigned to those which have undergone respiration. Thus, it is said, a child may not have breathed, and yet the application of the hydrostatic test would in such a case lead to the inference that it had. It will be seen that the force of this objection goes to attack directly the inference derivable from the presence of air in the lungs. There is only one form under which it can be admitted, namely, as it applies to lungs which have been inflated while *lying in the cavity of the chest.* Any experiments performed on inflation after their removal from this cavity, can have no practical bearing; since in a case of infanticide we have to consider only the degree to which the lungs may be inflated by a person who is fairly endeavouring to resuscitate a still-born child. The difficulty of inflating the lungs of a new-born child is too well known to require to be here adverted to; the greater the violence used, the less likely is the air to pass into these organs, but it rather finds its way through the gullet into the bowels. Dr. Albert, a writer on the subject, denies that the organs, while lying in the chest, can be so filled with air, either by the mouth, or by means of a tube, as to be rendered buoyant in water. In performing this experiment several times, he never found a trace of air in the air-cells; and he contends that medical jurists have begun at the wrong end (den Gaul von hinten aufgezäumt), in endeavouring to seek for answers to an objection before they had ascertained that such an objection could have, practically speaking, any valid existence. (Henke's 'Zeitschrift,' 1837, 2, 390.) M. Dépaul has still more recently found that it requires great force to inflate the lungs, and that their resiliency was sufficient to expel the greater part of the air thus introduced. ('Med. Gaz.' vol. 39, p. 283.)

Having had several opportunities of examining the lungs of children in which inflation had been resorted to, not for the express purpose of creating an objection to the hydrostatic test, but with the *bonâ fide* intention of resuscitating them, I may here state the results. In some of these instances a tube had been used, and in others the mouth. In the first case it was found, on inspection, that only about one-thirteenth part of the structure of the lungs had received air. In the second, no part of the lungs had received a trace of air, although inflation had been repeatedly resorted to; the air had passed entirely into the abdomen. In a third, attempts were made for upwards of half-an-hour to inflate the organs, but, on examination, not a particle of air was found to have penetrated into them. In a fourth, no air had entered the lungs, and in a fifth, although a small portion had penetrated into the organs, it was readily forced out by compression. In repeatedly performing experiments on dead children, the results have been similar; the lungs, after several attempts, were found to have received only a small quantity of air. Thus, then, it would appear that the lungs of a new-born child may be inflated *in sitû*, although with some difficulty, and that the quantity of air which they receive under these circumstances is generally small. If the efforts at inflation are continued for some time in the dead body, and the tube is violently introduced into the

larynx or trachea, or if the organs are inflated after removal from the chest, with the express intention of causing them to resemble respired lungs, the result is different; but this is not the mode in which the objection can possibly occur in a case of infanticide—a circumstance which appears to have been strangely overlooked by some of those who have examined this alleged objection to the hydrostatic test. It is not likely that a woman, if able to perform the experiment at all, would be capable of doing more than a practised accoucheur; and the probability is, that she would, in general, altogether fail in the attempt. One case is recorded, in which a woman, recently delivered, is stated to have succeeded in artificially inflating the lungs of her child ('Meckel, Lehrb. der. G. M.' 368; see also 'Ed. Med. and Surg. Jour.' vol. 26, p. 374); and another, in which this defence was urged on the part of a woman, is reported by Dr. von Siebold, of Göttingen (Henke's 'Zeitschrift der S. A.' vol. 3, 1845). The child, in this instance, was found with its head cut off, and the lungs contained air. The inconsistency of the woman's statement as to the mode in which she inflated the lungs was clearly proved, and the examiners did not hesitate to give a decided opinion that the air found in the lungs had been derived from the act of respiration, and not from artificial inflation. This case shows that, when a theoretical objection of this kind comes to be tested practically, it ceases to present any difficulty. It may happen, however, that another person may inflate the lungs, and if the mother has been secretly delivered, she may be wrongly charged with murder. (See case, Casper's 'Vierteljahrsch.' 1859, 2, 38.) A midwife here attempted to revive a child by breathing into its lungs after removal of its body from the soil of a privy; but the circumstances of the case were well known from the statement of the midwife. Other instances of inflation are reported by Dr. Dommes, in the same journal, 1860, 2, 131.

But let it be admitted that the lungs have been artificially inflated; in this case they would resemble, by their partial distension with air, and other physical characters, those of children which had imperfectly breathed. Like them, they may float on water; but on cutting them into pieces, some of these would be found to sink. If the pieces be firmly compressed, either by means of a folded cloth or between the fingers, they will lose their air and sink; so that in fact there are no physical means of distinguishing artificially inflated lungs from those that have imperfectly breathed. Experiment has repeatedly shown that when respiration has been feeble, and no artificial inflation resorted to, the air may be forced out of the lungs by moderate compression, and the portion so compressed will sink in water. If the compression be produced under water, bubbles of air may be seen to rise through the liquid. The results have been exactly the same when the lungs were inflated artificially as they were lying in the chest. (See 'Guy's Hospital Re-

Fig. 165.



View of the Lungs artificially inflated *in situ*.

a a The thymus gland.
b b The heart in its pericardium.
c c The lungs, the lighter portions of the engraving representing the unequal diffusion of air through the air-cells.

ports,' No. V.; and for some good remarks on this subject by Dr. Christison, see 'Edin. Med. and Surg. Jour.' vol. 26, p. 74.)

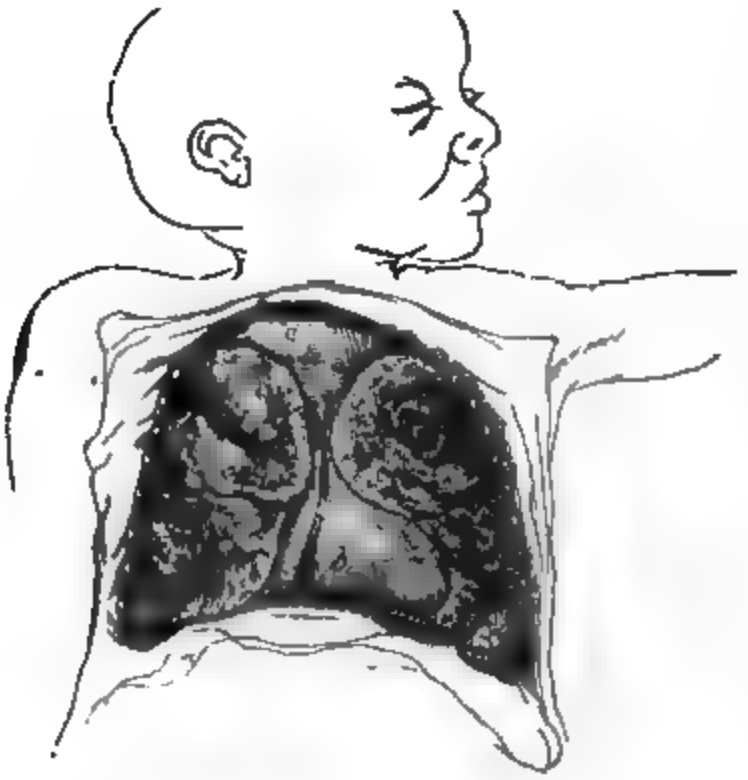
Artificial inflation compared with perfect respiration.—If respiration has been *perfectly* established, and the lungs are well filled with air, it is impossible so to expel this air by compressing the divided portions of the organs as to cause them to sink in water. If they have been only imperfectly distended by the act of respiration, they retain more or less of their fœtal condition, and the air may be forced out of them to a sufficient degree to cause them to sink in water. It has been hitherto considered that in all cases of artificial inflation as distinct from the act of respiration, the air introduced could be expelled by compression of the lungs, and hence that a difference existed between lungs which had perfectly breathed and those which had been simply inflated. My own experience is in favour of this view. In many experiments performed on the lungs of still-born children which had been artificially inflated, I have found that firm compression of them in a folded cloth sufficed to expel the air, which was in general only very partially distributed in isolated patches through the substance of the organs. My colleague, Dr. Hicks, referred to me a case that occurred in his practice, which shows that this distinction is certainly not in all cases available, and that too exclusive a reliance upon it, without full consideration of other circumstances, may mislead a medical witness. He delivered a woman of a full-grown child; it was still-born, and there was no effort at respiration. An attempt was made to resuscitate the child, but unsuccessfully, by blowing air into the lungs through a catheter. On inspection, the lungs were observed to be of large size, but they did not present the usual appearance of lungs which had breathed. Although about three-fourths of the organs had received air by inflation, they were of a pale-fawn colour, like the thymus gland. The air was contained in the minute air-cells. They floated on water as well as all the pieces (fifteen or sixteen) into which they were divided. When compressed between the fingers under water, small bubbles of air escaped; but no amount of compression short of destroying their structure caused these pieces to sink. A fact of this kind, although perhaps exceptional, shows that the non-expulsion of air from lungs by compression must not be regarded as an absolute proof of respiration. It must be taken with other circumstances, *e.g.* absolute weight and colour, as a fact, to show that the child has either breathed, or has had its lungs perfectly inflated in a *bonâ fide* attempt to restore life after birth, either by the mother or by some person present at the birth.

In respect to lungs thus submitted to compression, the results are the same whether the child has breathed for a short or a long time after its birth, provided only the act of breathing has been complete. In one instance I found it impossible to expel the air when the child had lived to make no more than one or two respirations, and had died before it was actually born. On this occasion it was found necessary, in order to effect delivery, to destroy the child while its head was presenting. It lived, however, a sufficient time after the protrusion of its head, with the greater part of the brain destroyed, to cry loudly for an instant. The general appearance of the body showed that it had attained to the full period of gestation. On opening the chest, the lungs were seen projecting slightly forwards over the sides of the pericardium. They were of a light-red colour, but not crepitant under the finger. They had the external physical characters which these organs are known to acquire on the first establishment of respiration; but the absence of crepitation proved that the air-cells were not completely filled. The colour of the external surface was throughout uniform, a circumstance which I have never witnessed in lungs that had been artificially inflated, except when the inflation had been carried to its fullest extent out of the body. Then, however, there is commonly distinct crepitation. When removed and placed on water, the lungs floated freely; and, on

being separated, both appeared equally buoyant. Each lung was next divided into sixteen pieces, and every piece floated. In dividing them, it was observed that the colour was uniform throughout their substance, but there was no sense of crepitation or crackling under the knife; and the cells in which the air was diffused could not be seen. The pieces were then subjected to forcible compression for some time in a folded cloth. The cloth was ruptured by the force employed; yet, on removing the pieces, and placing them on water, they all continued to float. A portion of air had, undoubtedly, been forced out, but not sufficient to deprive any of them entirely of their buoyancy. The compression was carried to the farthest possible limit consistently with the preservation of the organic structure of the lungs. From this we learn that in some instances two or three respirations may suffice to give great buoyancy to the lungs, and so distribute the air that it cannot be forced out of the small cells by compression.

It must not, however, be supposed that, in all children which have lived but a second or two to respire, similar results will be obtained. The respiration of an instant may distend the lungs of one child, as much as respiration continued for several hours would those of another. The time which a child has survived its birth does not allow us to predict to what degree its lungs will be found distended on inspection, or what the results of experiments on these organs will be. A child may have breathed feebly, and have died either in a few minutes or hours, or not until many days have elapsed after its birth. There is, of course, no definite boundary between the perfect and imperfect distension of the lungs, but by the latter condition, we may understand that state of the healthy organs in which they contain only sufficient air to render them buoyant in water; and from the slight difference in their specific gravity and that of water, a small quantity will suffice for this. In these cases, the colour, volume, weight, and consistency of the lungs are scarcely changed from the fœtal condition.

Fig. 156.



View of the Lungs imperfectly distended with air by respiration. The child died soon after it was born.
a The thymus.
b The heart in its pericardium.
c c The lungs, of which the lighter portions of the engraving represent those parts which contain air.

It is proper to observe, that the results obtained by submitting the lungs to compression in cases of respiration and artificial inflation have been very different in the hands of experimentalists equally competent. Some state that they have been able to force out the air in both instances, others in neither case. These discrepancies may depend either upon the different degrees of pressure employed, or upon the actual degree of distension of the lungs. The fact of their existence shows, at least, that the lung-tests cannot be safely trusted in the hands of persons who have not been used to such investigations. It appears to me that there has been a great deal of misplaced discussion on this subject. One case should at least be adduced, in which a woman charged *with child-murder* has been or can be hypothetically exposed to any risk of

conviction, from the admission that air cannot by compression be forced out of artificially inflated, or that it can be expelled from respired, lungs. I am not aware that there is a single instance in our law-records of such an objection being raised upon any but merely hypothetical grounds, in opposition to all the circumstances of the case. It might be imagined, however, from the discussions among medical writers on the necessity for certain and infallible means of distinguishing artificial inflation from respiration, that every woman tried for child-murder had made the praiseworthy attempt to restore a still-born child, although circumstances may show that she had cut its throat, severed its head, or strangled it, while circulation was going on! (See case, 'Prov. Med. Jour.' April 23, 1845.) If compression be trusted to as a criterion, without a proper regard to other facts, a practitioner not used to such cases may undoubtedly be easily led into error; but he may be equally deceived if he trust what has been proposed as a substitute for compression—*i.e.* a mere physical inspection of the lungs.

Artificial inflation not distinguishable from imperfect respiration.—It must, however, be admitted, that there are no means of distinguishing *feeble respiration* from *artificial inflation.* The physical characters of the lungs will be unaltered; and compression may, in either condition, destroy their buoyancy. In a case of this kind, I apprehend, the only course left open to a medical witness is, to state to the jury that the evidence derived from experiments on the lungs left it uncertain whether the child in question had breathed, or had had its lungs artificially inflated. The jury will then know how to return their verdict; for it must be remembered, they have always circumstances, as well as medical opinions, to guide their judgment; and it is upon the *whole*, and not upon a part, of the evidence laid before them, that their verdict is founded.

It is singular that the occasional difficulty of distinguishing artificial inflation from respiration, whether perfect or imperfect, should have been represented as a serious objection to the employment of the hydrostatic test. Even admitting, in the few instances in which such a defence on the part of a prisoner is possible, that a practitioner is unable to distinguish one condition from the other, this becomes purely a point for the consideration of a jury: it cannot affect the general application of the hydrostatic test. Examples of this sort of difficulty are by no means uncommon in the practice of medical jurisprudence. Many instances might be adduced of medical evidence being rendered doubtful by circumstances wholly independent of the skill of the practitioner, and over which he has had no possible control. In the determination of any single point in a case of child-murder, whether it relates to live-birth or the actual cause of death, a doubt may arise; the question relative to the respiration of a new-born child is not exempted from this rule; but it would be the height of inconsistency to contend that, because certain means of investigation will not always enable us to express a positive opinion, we should never have recourse to them. I presume that, in the present day, no medical man would trust to the floating of the lungs as a sign of breathing, before he had ascertained that the air contained in them could not be expelled by compression. The charge against an accused party is not likely, therefore, to be sustained by medical evidence of the respiration of the child, unless the child has actually breathed; but it is possible that, owing to a want of evidence to characterize feeble respiration, a really guilty person may escape upon the bare assumption that the lungs might have been artificially inflated. The mischief to be apprehended is not, then, as it has been often alleged, that the employment of this pulmonary test may lead to the condemnation of an innocent, but rather to the acquittal of a guilty, person.

In reference to this objection, there are, it appears to me, only two cases.

which may give rise to some doubt respecting the source of the air contained in the lungs of a new-born child.

Doubtful cases.—1. In the case of a child that has not breathed, the lungs may be disproportionately heavy, weighing nine hundred to one thousand grains, and they may have been artificially inflated in the attempt to resuscitate it. Unless, in this case, the air was expelled by compression, an inference might be hastily drawn, that the child had probably breathed. The error could be removed only by circumstantial evidence; which, however, is generally sufficient to remove a speculative objection of this kind. But unless the fœtal lungs were highly congested, diseased, or of extraordinary size, it is not likely that they would weigh so much as is here supposed. These doubtful cases may always be suspected to exist when, with *considerable absolute weight, the lungs contain very little air.* Let us, however, consider what would be its practical bearing on a question of child-murder, supposing the case not to be cleared up by any of the methods above suggested. 1st. The fact of respiration would not be clearly proved, because the great absolute weight of the lungs, without their structure being permeated with air, amounts to nothing. 2ndly. Although the proof of respiration might not be made out, this would not show that the child was born dead; for we know that a child may live many hours, and yet no evidence of life may be derived from an examination of the lungs (p. 340, *ante*). 3rdly. Admitting that there was proof of the child having lived after its birth, whether there were evidence of respiration or not, the cause of death would have still to be made out; and unless this be clearly traced to the wilful and malicious conduct of the prisoner—proofs of which are not likely to be derived from the body of a child whose lungs she has innocently inflated—she must be acquitted. Thus, then, it is difficult to understand how, in the hands of one who has attended to the subject of infanticide—and no others ought to be allowed to give medical evidence—this objection, on the ground of inflation, can lead to any difficulty whatever in practice. Such a case as that which I have here supposed actually occurred to me in June 1842. A male child, weighing upwards of twelve pounds, died during delivery in a difficult labour. It gave no signs of life when born, and there was no pulsation in the cord. Its lungs were artificially inflated in the attempt to resuscitate it. The organs weighed nine hundred and ninety-four grains. They were slightly crepitant and floated on water, but gentle pressure by the fingers caused them to sink. It was clear that the increased weight depended on their great size, and not on any change produced by respiration. They contained but a small quantity of air, which was easily expelled by pressure. In another case, which I examined in June 1847, the child was born dead. The body was well developed, and the lungs weighed 748 grains. These organs were inflated as they were lying in the chest. On moderate compression, when divided, they immediately sank in water.

2. We will now take the converse objection. A child may live and breathe, and its lungs weigh much under the average of respired lungs, *i.e.* about seven hundred grains. In a case like this, unless the air resist expulsion by compression, a converse mistake might be made, and we should pronounce a child that had really breathed and survived birth to have been still-born and to have had its lungs artificially inflated. This might happen in numerous cases of imperfect respiration after birth, did we not know that the sinking of the lungs, whether containing air or not, and whether this air be expelled by compression or not, does not necessarily prove that a child was born dead. It can only show, under the most favourable circumstances, that it has either not breathed, or breathed but imperfectly. The sinking of the lungs may take place in a child that has survived birth and has really been murdered; but in

such a case there may be no proofs of life; and therefore a person actually guilty of a crime would be discharged for want of sufficient medical evidence to convict. This, however, could no more justify the entire abandonment of medical evidence in such cases, than it could of general evidence, because this, like evidence which is purely medical, is but too often insufficient to bring home guilt to the really guilty. The objection, therefore, on the ground of artificial inflation, when closely examined, is more speculative than real. Admitting, as some contend, that there is no positive criterion to distinguish this condition from respiration in any degree, it is difficult to conceive a case in which the objection could be sustained; and, if sustained, it never could lead, in the hands of proper witnesses, to the inculpation of the innocent: unfortunately for society, it would only add another loophole to the many which, through the necessary forms of law, now exist for the escape of the guilty.

Improper objections to the hydrostatic test. Summary.—In concluding these remarks upon the objections to the hydrostatic test, it may be observed that medical practitioners have differed much at different times in their ideas of what it was fitted to prove. About fifty years ago, it would seem that this test was regarded by some as capable of furnishing evidence of murder! Thus we find Dr. Hunter asking the question, 'How far may we conclude that the child was born alive, *and probably murdered by its mother*, if the lungs swim in water?' Later authorities, and, indeed, many in the present day, assert that the test is capable of proving whether a child has been *born alive* or not! From what has already been stated, as well as from the most simple reflection on the circumstances accompanying the birth of children, I think it must be evident that the hydrostatic test is no more capable of showing whether a child has been *born alive or dead* than it is of proving whether it has been murdered or has died from natural causes. The majority of those who have made experiments on this subject have only pretended to show, by the use of this and other tests, whether or not a child has *breathed*; they merely serve to furnish in many cases good proof of life from the state of the lungs; and slight reflection will render it apparent that in no case are they susceptible of doing more. Even here their utility is much restricted by numerous counteracting circumstances, a knowledge of which is essential to him who wishes to make a practical application of the facts connected with them. (See 'Edin. Med. and Surg. Jour.' vol. 26, p. 365.)

If asked to state in what cases the pulmonary tests are capable of assisting a medical jurist, the answer, it appears to me, would be:—1st. They will clearly show that a new-born child has lived, when, during its life, it has *fully and perfectly breathed*. Cases of this description form a certain number of those which come before our Courts of Assize. To them the most serious objections are not applicable; and the few which might be made to the medical inferences are not difficult to answer. 2ndly. They will allow a witness to say, that the lungs must have received air either by *breathing*, or, in some rare cases, by artificial inflation. These are the cases in which a child has died soon after birth, and where the respiratory changes are but imperfectly manifested in the lungs. They probably form a large proportion of those which fall under the jurisdiction of the criminal law. It might be considered, that the qualifications in the inference here drawn would neutralize its force; but it must be remembered, that there are few instances of actual and deliberate child-murder wherein artificial inflation could become even a possible defence for an accused person. So unusual is this kind of defence, that among the numerous trials for infanticide which have taken place in this country for many years past, I have not been able to meet with a single instance in which it was alleged as an objection to the medical evidence derived from the buoyancy of the lungs, that the prisoner had inflated them in order to resuscitate

her child. The reason is obvious: had such a defence been attempted, the whole of the circumstantial evidence would at once have set it aside. When, in the suspected murder of an adult, a medical man swears that a fatal wound was such that the deceased might have inflicted it on himself, or that the prisoner might have produced it, he is placing the jury in a position very similar to that in which he places them in a case of child-murder, when he says that the child might have breathed, or its lungs might have been artificially inflated. How would a jury decide in the two cases? Assuredly, by connecting certain facts with which a medical witness is not concerned, but which may, in their opinion, satisfactorily supply the place of what is deficient in his evidence. It is not for him to speculate on the probabilities of respiration, or of artificial inflation; but it is for them to consider whether an accused party was or was not likely, under the particular circumstances of the case, to have resorted to an experiment of this nature. It has been suggested that some person might inflate the lungs of a dead child, in order to raise a charge of murder against its mother; but this suggestion presupposes, on the part of a criminal, a profound knowledge of the difficulties of medical jurisprudence; and even then the question of *murder* does not happen to depend merely on the presence of air in the lungs. Such a case is very unlikely to present itself; indeed, its occurrence is no more probable than that in poisoning it should be considered a good defence that some person might have introduced poison into the body by injections after death. The circumstances of the case will commonly furnish a sufficient answer to such hypothetical views.

The hydrostatic test ought not, therefore, to be lightly condemned, or rejected upon a speculative objection, which, in nine-tenths of the cases of child-murder, could not possibly exist. Let it be granted to the fullest extent, that a conscientious medical jurist cannot always draw a positive distinction between the effects of respiration and artificial inflation on the lungs; still a jury may be in a situation to relieve him from this difficulty. In short, it would be as reasonable to contend that all murderers should be acquitted because homicidal are not always to be distinguished from suicidal wounds, as to argue that all cases of infanticide should be abandoned because these two conditions are not to be distinguished from each other by any certain medical signs. If juries do frequently dismiss such cases, it is, I apprehend, to be ascribed rather to their great unwillingness to become the means of administering what they consider to be severe laws, than to their want of power to balance and decide on the probabilities laid before them. If the pulmonary tests were wholly set aside, it is easy to conceive what would be the consequences. Let us suppose that a new-born child is found, under suspicious circumstances, with its throat cut: we are called upon to say that it is impossible for medical evidence to establish whether the child has lived or not, and therefore we are to decline making an inspection of its body. But this would be equivalent to declaring that child-murder could never be proved against an accused person, and that new-born children might henceforth be destroyed with impunity! It appears to me that conduct of this kind, on the part of a medical witness, would be wholly unwarrantable; for we may sometimes acquire, by an inspection, as great a certainty of respiration having been performed, and therefore of a child having lived, as of any other fact of a medico-legal nature. Cases of poisoning often give rise to greater difficulties to a medical jurist; as where, for example, he attempts to found his opinion of the cause of death on symptoms alone or on appearances in the dead body. But we may put the question in a practical light. In the body of a healthy full-grown child, which has but recently died, we find the lungs filling the cavity of the chest, of a light red colour, spongy, crepitant beneath the finger, weighing at least two ounces, and, when divided into numerous pieces, each piece floating on water, even

after firm compression. Is it possible in such a case to doubt that respiration has been performed? If there is no certainty here, it appears to me that medical experience is but little fitted in any case to guide us in our inquiries. It would be difficult to point out an instance in which an affirmative medical opinion would be more surely warranted by the data upon which it was founded.

So far as I know there is only one recent instance in which a medical man declined to make an inspection of the body of a new-born child for the purpose of examining the state of the lungs. (*Reg.* v. *Pitt.* Dorset Summer Ass. 1859.) The body was found much mutilated and with such injuries as would have fully accounted for its death, assuming it to have been born alive. At the inquest the coroner suggested that a post-mortem examination should be made. The chief medical witness declined, not considering it to be necessary. He was then asked by the coroner whether the floating of the lungs would indicate that the child had breathed, to which he replied that that theory was now exploded! It seems that the death of the child was so recent that when the body was found, it was quite warm. It also became rigid in the usual time.

The medical witness relied upon warmth and rigidity in the body as proofs of the child's having been born alive, when it is obvious that those states could only prove that the child had been recently living. The neglect to examine the body led to an acquittal. There was no proof of life as the result of breathing and no evidence to show whether the injuries were inflicted before or after death.

Respiration before or during birth.—It has been already stated that the pulmonary tests are fitted to prove only whether a child has or has not *lived to breathe.* Neither the hydrostatic nor any other test can positively show that the body of a child was entirely *born alive* when the act of breathing was performed. As this is a subject which generally gives rise to some discussion in cases of child-murder, I shall here make a few remarks on it. 1st. Respiration may be performed while the child is in the uterus, after the rupture of the membranes—the mouth of the child being at the os uteri. This is what is termed *vagitus uterinus*; its occurrence, although extremely rare, seems to me to rest upon undisputed authority. 2ndly. A child may breathe while its head is in the vagina, either during a presentation of the head or of the breech. This has been termed *vagitus vaginalis.* It is not very common, but it must be set down as a possible occurrence. 3rdly. A child may breathe while its head is protruding from the outlet: in this position respiration may be as completely set up in a few moments by its crying, as we find it in some children that have actually been born, and have survived their birth for several hours. This is the most usual form of respiration before birth. In the *vagitus uterinus* or *vaginalis* the lungs receive but a very small quantity of air; in respiration after protrusion of the head the lungs may be sometimes found moderately well filled, although never, perhaps, possessing all the characteristic properties of those which have fully breathed. The well-known occurrence of respiration under either of these three conditions strikingly displays the fallacy of making this process, as some have done, the certain boundary of extra-uterine life (*ante*, p. 208). A child may breathe in the uterus or vagina, or with its head at the outlet, and die before its body is born: the discovery of its having breathed would not, therefore, be any sort of proof of its having enjoyed what has been termed 'extra-uterine life.' (For a well-marked case of this kind, see 'Med. Gaz.' vol. 38, p. 394; and another communicated to me by Dr. Crothers of Coy, will be found in 'Guy's Hospital Reports,' October 1850, p. 231.) The death of a child which has breathed in the uterus or vagina, from natural causes before its entire birth, is a possible occurrence; but its death from natural causes before birth, after it has breathed by the protrusion of its head from the outlet, is an unusual event. All that we can

say is—it may take place; but the death of a child under these circumstances would be the exception to a very general rule. Oberkamp, in four successive deliveries of the same woman, observed that the children breathed before delivery, but died before they were born. A case of this kind also occurred to Diemerbroek. (See Meckel, 'Lehrbuch der G. M.' p. 367; Beck's 'Med. Jour.' vol. 1, p. 498; also 'Edin. Med. and Surg. Jour.' vol. 26, p. 374.) The cases reported by Beck, of which there are three, lose much of their value from the fact that the lungs were not examined.

The following case, communicated to me by Dr. Hicks, occurred in the Obstetric Charity of Guy's Hospital. A woman was delivered of a large child, weighing thirteen pounds. The forceps were required in order to deliver the head. After the head was born, and before the entire extrusion of the body, the child breathed four or five times. There was then a total cessation of respiration, as well as of pulsation of the heart for some time (apparent death), but these were restored by artificial inflation of the lungs, when the child was entirely born. It was alive when last heard of. If we suppose that this woman had been privately delivered of an illegitimate child, and there had been no assistance at hand, a practitioner, relying upon the act of respiration as a proof of live-birth, might have pronounced such a child to have been born living. (See 'Guy's Hosp. Reports 1866, p. 475.')

Respiration a sign of life, not of live-birth.—It is commonly assumed that if air is discovered in the lungs of a new-born child as a result of breathing, the child must have been *born* alive. The application of the hydrostatic test, however, proves no more than that the child has breathed. Obvious as this conclusion is from the cases above related, medical witnesses, in giving evidence on these occasions, frequently fall into the error of assuming that the hydrostatic test is capable of proving 'live-birth.' Some medical jurists of repute have sanctioned this erroneous view, ignoring the fact that a child may breathe and die before the entire birth of the body, while the test cannot show whether the act of breathing was performed during birth or afterwards. Among others the late Professor Casper of Berlin expresses his opinion that if we find air in the lungs of a new-born child, such a child must have been born alive. The reasoning of Casper is as extraordinary as his conclusion. He says: 1. During a rapid delivery those conditions are wanting which lead to breathing in utero or during birth. 2. All cases of secret delivery are rapid, and it is in these cases only that the hydrostatic test can be applied to the lungs, hence the proof of breathing in a secretly-born child must be regarded as breathing after and not in or during birth ('muss jedes von der Athemprobe nachgewiesene Geathmethaben eines heimlich gebornen Kindes als ein Athmen nach (nicht in oder vor) der Geburt, das Kind folglich als ein lebend geboren gewesenes erachtet werden.' 'Gerichtliche Medicin,' vol. 1, p. 710.) It will be seen that this medical jurist entirely ignores the facts pointed out by Dr. W. Hunter eighty years ago, and accumulated by numerous obstetric authorities since his time.

On a late trial for child-murder a medical witness being asked on what he based his statement that the child had been born alive, said—the presence of air in the lungs, and quoted Casper as his authority. There may be cases in which the signs of full respiration would justify an opinion of live-birth, but the dictum of Professor Casper is quite inadmissible. The floating of the lungs in water is not a proof that they did not receive air before or during birth, and it cannot be admitted that all cases of secret delivery are necessarily rapid cases—so rapid that the child has no time to breathe during birth.

By a proper attention to recorded facts it will be seen that the hydrostatic test can only enable a medical jurist to say that a child has *breathed*. With *this reservation* the admission that a child may breathe before its body is en-

tirely born, does not constitute the smallest objection to its employment; although upon this ground, we find the use of it, in any case, denounced by some members of the medical and legal professions. Thus, Archbold says, 'Very little confidence is placed in this test as to the lungs floating, particularly if the child were dead any length of time before the experiment was made' ('Criminal Pleading,' p. 367): Mathews speaks of the test as being 'quite exploded' ('Digest,' p. 251); and Jervis makes the same remark ('On Coroners,' p. 127). It is obvious that most members of the law who have treated this subject have adopted, without sufficient examination, the statements of Dr. William Hunter. This author observes: 'A child will commonly breathe as soon as its mouth is born or protruded from the mother; and in that case may lose its life before its body be born, especially when there happens to be a considerable interval between what we may call the birth of the child's head and the protrusion of its body. And if this may happen where the best assistance is at hand, it is still more likely to happen when there is none—that is, where the woman is delivered by herself.' ('On the Uncertainty of the Signs of Murder in the case of Bastard Children,' p. 33.)

Dr. Hunter here exposes, in plain language, the fallacy of trusting to signs of respiration alone, as evidence of a child having been *born* alive. The truth of his remarks is, in the present day, generally admitted; and if, among medico-legal writers, we find some still treating of respiration as a certain proof of live-birth, it is from their not having sufficiently considered the probability of a child breathing and dying before its body is entirely extruded. But we may ask, How does the admission of these views affect a case of deliberate child-murder? A living and breathing child may be wilfully destroyed before its body is entirely born, as well as afterwards: and if the law of England does not contemplate the wilful destruction of a living and breathing child before its entire birth as a crime, this omission cannot be imputed as a fault to the medical jurist; nor can it at all diminish the real value of the hydrostatic test as furnishing indisputable evidence of *life*. Most persons might consider the crime of murder sufficiently made out when the medical evidence showed that a child had lived, and that it was *living* when *criminally destroyed*. If, however, this does not constitute infanticide in law, and evidence be further insisted on, to set forth *where* the child was actually living when murdered—whether half protruding from the vagina, or altogether external to the body of the mother—then the fact of breathing before birth is an objection rather to the principles of the law than to the test used to determine the presence of life.

In a case tried a few years since, in which a child had been found with a ligature firmly tied round its neck, the medical evidence showed clearly that it had breathed; and the whole of the appearances in its body were such as to leave no medical doubt that it had died by strangulation. The judge, in charging the jury, said, 'If they were of opinion that the prisoner *had strangled her child before it was wholly born, she must be acquitted of the murder!*' The prisoner was acquitted. However we may regard the question of the utility of pulmonary tests, we must look upon that law as but very imperfectly adapted to its purposes which makes the proof of murder to rest, not upon the actual and wilful destruction of a living child, but upon the precise moment which a murderer may select for the accomplishment of the crime. Impunity is thus held out to all offenders who destroy a living child during the act of birth; but there is an additional evil accompanying the operation of this legal rule, which seriously affects the medical evidence given on these occasions. It would seem, from cases to be presently related, that the law will assume, until the contrary appears from other circumstances, that the respiration of a child, if proved by the best of evidence, was carried on be-

fore it was entirely born, and not afterwards. Let the witness, then, in a case of alleged child-murder, ever so clearly establish the fact of respiration and therefore of life, at the time the violence was used, this evidence is not always sufficient. He is asked whether he will undertake to swear that the child had breathed *after* its body was entirely in the world. Unless he can go as far as this—which, for obvious reasons, he can rarely be in a condition to do—it will be legally assumed that, although the child had breathed, it had come into the world dead. Hence, we perceive, a legal shield is effectually thrown around those who may have been really guilty of destroying their children immediately after birth. Under any moral consideration of the circumstances, it appears to me impossible to admit that a woman who kills her child in the act of birth is less guilty of murder than she who chooses the moment of its entire expulsion to destroy it; and any such distinction, carried to its full extent, must virtually go to the abrogation of the law for the suppression of child-murder. It is quite necessary that medical witnesses should know what they are required to prove on these occasions; and the following cases will, perhaps, serve to place this matter in a stronger light.

The killing of children which breathe during birth not child-murder.—In the case of *Rex* v. *Poulton*, good medical evidence was given to show that the child was living when the violence was offered to it. Of three medical witnesses who were called, the first said, in answer to questions put to him: It frequently happens that a child is born as far as the head is concerned, *and breathes*, but death takes place before the whole delivery is complete. My opinion in this case is, that the child had breathed, but I cannot take upon myself to say that it was wholly born alive. The second said that death might have occurred when the child was partly born, if no medical man was present to assist in the delivery. The third witness said: It is impossible to state when the child respired; but there is no doubt from the condition of the lungs when they were examined, that the child had breathed: children may breathe during birth. (Chitty, 'Med. Jur.' 412.) The evidence here given shows that the witnesses were intelligent men; and that they had duly reflected upon that which the hydrostatic test is really capable of proving. The judge held that this medical evidence was not sufficient: 'something more was required than to show that a child had breathed in the progress of its birth; it must be proved that the *whole body* of the child was brought into the world.' (See 'Mathews's Digest,' Supp. 25; also Archbold's 'Crim. Plead.' 367.) In *Rex* v. *Simpson*, tried at Winchester in March 1835, Baron Gurney would not allow the case to proceed against a prisoner, so soon as the medical witness stated that the lungs of the child might have become distended by the act of breathing during birth. In *Rex* v. *Brain* it was held that the child must be wholly in the world in a living state to be the subject of murder; and in *Rex* v. *Sellis* (Norfolk Spring Circuit, 1837), Mr. Justice Coltman held that, to justify a conviction for child-murder, the jury must be satisfied that the entire body of the child was actually in the world in a living state when the violence was offered to it. In relation to an important case of infanticide, tried at the Herts Lent Assizes, 1841 (see 'Guy's Hospital Reports,' April 1842), the learned judge (Parke, B.) thus charged the grand jury: 'With respect to all these cases (of infanticide) there is a degree of doubt whether the infant has been *born* alive. The law requires that this should be *clearly proved*, and that the whole body of the child should have come from the body of the parent. If it should appear that death was caused *during delivery*, then you will not find a true bill!' In another (*Reg.* v. *Christopher*, Dorset Lent Assizes, 1845), Erle, C.J., drew a distinction between medical (physiological) and *legal* life. The medical evidence clearly established that the child had breathed. It was found with its head nearly severed from the body.

Erle, C.J., directed the jury that, before they returned a verdict of guilty, they must be satisfied that the child was completely born, that it had an existence *distinct and independent from the mother*, and that it was murdered by her. It was possible the child might have breathed without being completely born into the world, and although *this might medically be a live child, it was not one legally*. In law, the birth of the child must be complete. The jury acquitted the prisoner. ('Prov. Med. Jour.' April 23, 1845.) In another case a medical witness was reprimanded for drawing an inference from the application of the hydrostatic test, that the child had been born alive. This case was tried on the Midland Circuit in 1853 (*Reg.* v. *Stevens*), before the late Baron Alderson. The body of the child was taken from a river: it was found in a pillow-case with a stone attached to it. There were several incisions on the throat, and the navel-string had been torn away. The state of the lungs showed that the child had breathed, and it was clearly proved to be the child of the prisoner. The medical witness is reported to have stated during his examination, that he had no doubt the child was born alive; upon which the learned judge reproved him for his rashness, and inquired whether the appearances which he had observed, enabled him to say more than that the child had breathed. The witness admitted they did not, and also that the child might have breathed *before* it was completely born. In his summing up, the learned judge remarked that 'the medical evidence only proved that the child had breathed; but a child may breathe before it is separated from the body of the mother, that is, before it is born, and this child may have died before it was born.' We have therefore no certainty of there ever having been a person on whom a murder could be committed. The prisoner was acquitted.

On a more recent occasion, in *Reg.* v. *Taylor* (Hereford Summer Assizes, 1863), there was evidence that the child, with the murder of which the prisoner was charged, had been heard to cry, and the medical witness properly admitted, in answer to the learned judge, that a child might cry before it was fully born. The jury were then directed to consider whether, under the circumstances, the child was wholly born alive, and if they found it was not born alive, they could not find the prisoner guilty of murder or manslaughter. The jury acquitted her of the charge.

From these decisions it will be seen that it is not sufficient for a medical witness to depose, from the state of the lungs, that the child was alive *at or about* the time of its birth; according to the present views of our judges, it is indispensably necessary for him to prove that the child was born alive, or that it was living *after* its body had *entirely* come into the world.

Conclusions.—The general conclusions respecting the employment of the hydrostatic test, to be drawn from the contents of this chapter, are—

1. That the artificial inflation of the lungs of a child born dead will cause them to float on water.

2. That while lying in the chest, the fœtal lungs are not easily inflated, and that the difficulty in inflating them is great in proportion as the child is immature.

3. That lungs artificially inflated while in the chest, resemble those organs in which respiration has been only imperfectly established.

4. That in cases of inflation of the lungs in the chest, the air may be generally expelled from the divided portions of lung by firm compression, so as to cause them to sink.

5. That the same result occurs with lungs in which respiration has been imperfectly established.

6. That when lungs have undergone perfect respiration, the air cannot be expelled by compression of the divided parts, so as to cause them to sink.

7. That the artificial inflation of fœtal lungs causes no alteration of weight, and as the weight increases in proportion to the degree of respiration, so in

healthy lungs, with great buoyancy, there should be great weight if the air has been derived from respiration.

8. That while respiration increases the absolute weight of the lungs, it diminishes their specific weight by leading to the distension of the pulmonary cells with air.

9. That when the lungs are very heavy, and contain but little air, it cannot with certainty be inferred that respiration has been established. The facts, *cæteris paribus*, may be explained by supposing that the lungs were naturally heavy, and that they have been artificially inflated.

10. That we should base our judgment of a child having breathed upon great weight and great buoyancy of the lungs combined,—that the one condition without the other is open to the objection, that the air may not have been derived from respiration.

11. That experiments on fœtal lungs, artificially inflated with air after removal from the chest, have no practical bearing on this enquiry.

12. That the floating of the lungs on water proves, *cæteris paribus*, that a child has breathed either at, during, or after birth: it does not prove that a child was born alive, or that it has died a violent death.

13. That the sinking of the lungs, as a result of the expulsion of air from them by compression, does not necessarily prove that the child was born dead. It merely proves that the air contained in them was derived either from artificial inflation, or from imperfect breathing.

14. That the hydrostatic test is not applicable to determine the fact of respiration or non-respiration in all cases of alleged child-murder; but that, with ordinary precautions, it may be safely employed in the majority of such cases.

15. That a child may breathe before, during, or after birth, but the hydrostatic test will not enable us to say, in the greater number of cases, at which of these periods the act of respiration was performed.

16. That breathing is a sign of life, and not necessarily of live-birth.

17. That, according to the present state of the law, the killing of a child which breathes *during birth* is not murder.

18. Hence medical evidence is required to show whether a child breathed *after* it was *entirely* born, and whether the act of violence which caused its death was applied to it while so breathing.

These conclusions are here, for the sake of clearness, expressed with brevity. Some of them may require qualification; but for the circumstances which qualify them, the reader is referred to the contents of the chapter.

(The reader will find a good summary of the mode of applying the hydrostatic test, as well as of the conclusions which may be drawn from its proper application, by M. Devergie, in the 'Ann. d'Hyg.' for 1872, 2, 169. See also a paper by M. Tardieu, 'Ann. d'Hyg.' 1867, 2, 217 and 365.)

CHAPTER 77.

ON THE PROOFS OF A CHILD HAVING BEEN BORN ALIVE—EVIDENCE FROM WARMTH AND RIGIDITY OF THE BODY—FROM RESPIRATION—FROM AIR IN THE STOMACH AND INTESTINES — FROM MARKS OF VIOLENCE — EVIDENCE FROM NATURAL CHANGES IN THE UMBILICAL VESSELS THE FORAMEN OVALE AND DUCTUS ARTERIOSUS—CLOSURE OF THE FORAMEN AND DUCT BEFORE BIRTH.

THE great question on a trial for child-murder is, whether the child has been born alive; and in order to answer this, it is necessary to consider what are

the proofs of *live-birth* which are available to a medical witness in a criminal case.

Warmth and rigidity of the body.—The body of a new-born child when discovered may have some warmth about it. This, however, could only prove, according to the circumstances under which the body is found, that the child had not been long dead. The question arose in the case of *Reg.* v. *Pitt* (Dorset Summer Assizes, 1869), the body of the child was rolled in a quilt and placed in a drawer, and when found the body and legs were quite warm. The medical witness inferred from this fact that it was born alive, but he properly admitted that a still-born child would be warm when born, and therefore neutralized the statement previously made. In the same case the witness having found cadaveric rigidity in the muscles about seventeen hours after death, stated his belief that this was also a proof of live-birth, since it would not have taken place if the child had been still-born. It need hardly be said that if the child had died shortly before birth or during birth, cadaveric rigidity would have equally taken place. These conditions of the dead body simply prove that the child was recently living: they do not prove that it was born alive.

Evidence from respiration.—As a general rule, there will be no perceptible difference in the state of the lungs, whether the act of breathing is performed by a child during parturition or after it is born, provided that its death speedily follows its birth. But should we find that this process has been *perfectly established*, *i.e.* that the lungs present all those conditions which have been described as characteristic of full and perfect breathing, there is great reason to presume that the process, even if it had commenced during birth, must have continued after the child was entirely born. This presumption becomes still stronger when the child is immature; for, generally speaking, such children must be born and continue to breathe for many hours after birth, in order that their lungs should present the characters of complete respiration. The process is seldom so established before birth as to give to these organs a feeling of crepitation under pressure: the existence of this character should therefore be sought for. A witness who relied upon it as a conclusive proof of respiration *after* birth, might be asked by counsel, whether it were not possible for some children to remain so long at the outlet with the head protruding, as to render the lungs crepitant from frequent respiration *before* entire birth. Admitting the bare possibility of this occurrence, he should endeavour to ascertain whether there were any probable causes thus to protract delivery while the head of the child was in this position; as also, what natural cause could have produced its death when its head was protruding, and when respiration had been so freely performed as to give crepitation to the lungs. The presence or absence of the usual scalp-tumour might throw some light upon the case. If, when present, it did not prove live-birth, it might indicate protracted delivery, and show that the child had been recently living. The late Professor Casper, of Berlin, cut the Gordian-knot of this difficulty, by assuming that breathing before birth takes place only in protracted delivery, in which the assistance of an accoucheur is required. In those cases which are likely to give rise to criminal investigations, he assumes that the birth of the child takes place quickly, and that in rapid delivery the child does not breathe until it is entirely born alive. This is an unfounded assumption, on which some remarks have been elsewhere made, *ante*, p. 358. Such a conclusion is not in accordance with the facts ascertained regarding the act of respiration in new-born children; it may be that they may rarely die from natural causes after they have breathed, but that they can breathe during birth is a fact which cannot be disputed (*ante*, p. 357). Further, there is no test known by which air received into the lungs during birth can be distinguished from that which has entered these organs after the child has been born alive.

Air in the stomach and intestines.—The presence of air or gases in the stomach and intestines of a new-born child, provided the body is not in a putrefied state, has been considered by Breslau of Zurich to indicate that the child must have been born alive, and lived independently of the mother. The greater the quantity of air or gas, and the lower it is found in the alimentary canal, the more certain it is, according to him, that the child must have survived its birth. Liman considers from his observations that this is a useful adjunct to the hydrostatic test. There is no air or gas in the stomach and intestines of a new-born child until after it has breathed; and the air is supposed to penetrate these parts by the act of swallowing. If this be the case, it can do little more than establish a presumption of live-birth, for if a child can breathe before birth, it may also swallow air. ('Ann. d'Hyg.' 1868, 2, 224; Horn's 'Vierteljahrs.' 1868, p. 1.)

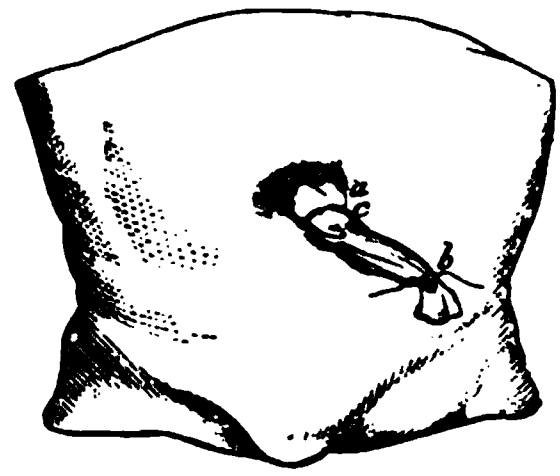
Evidence from marks of violence.—If marks of violence, apparently inflicted about the same time, are found on different and remote parts of the body, and these marks bear the characters of those produced during life, it is rendered probable that the whole of the body of the child was in the world when they were caused. Marks of severe violence on one part, as the head or breech, would not always justify such a presumption, because it might be fairly objected that they had been unintentionally produced by the woman in her attempts at self-delivery, and yet the child not have been born alive. It would be for a witness to form an opinion from the circumstances accompanying the particular case, whether they had been thus occasioned. From this it will be seen that, in making an examination after death, it is proper that every mark of injury on the body of a child should be noted down. In March 1848, I was consulted by Mr. Prince, a former pupil, in reference to a case in which the presumption of live-birth rested mainly on the degree of respiration, and the position and nature of certain marks of violence found on the child's body. The child, which was said to have been born dead, was exhumed two days after burial and eleven days after birth, and the body examined by Mr. Prince. It was full-grown, and not putrefied; the skin pale and free from lividity. There was a clean cut on the right arm, dividing the membrane (fascia) and muscles, as if made by a sharp instrument. The edges were much retracted, and the whole of the wound was of a florid red colour; but there was no swelling or appearance of inflammation. There was a large vesicle (like the blister of a burn) on the scrotum, containing three drachms of a yellow-coloured serum. On the right leg, the muscles were exposed for nearly the whole length: the surface of the wound was of a deep scarlet colour, and the margin widely inflamed. It had the appearance as if fire had been applied to the leg, although there was no sign of charring. These facts tended to show that the child was living when the injuries were inflicted; while the nature and situation of the injuries, rendered it impossible that they could have arisen from any accident during delivery. The state of the lungs was somewhat remarkable: the *left* floated freely in water, and there was distinct crepitation in it; the right sank in water, no portion of it, when divided, was observed to float. From the buoyant and crepitant state of the left lung, there was reason to presume that if respiration had commenced during birth, it had continued afterwards. Mr. Prince, therefore, inferred that the child had been born alive: this inference was corroborated by the appearance of the marks of violence. It is probable that the child did not live long after birth. The air could not have been derived from putrefaction or artificial inflation: therefore the only question here was, whether the child had breathed after its body was wholly in the world. The facts above mentioned justified the inference drawn by Mr. Prince. From a confession subsequently made by the mother, it appeared that the child had been born alive, and had cried, but, owing to the

injuries inflicted on it, it did not survive birth longer than a quarter of an hour. Although it is a rare circumstance that one lung should become thus fully distended with air, while the other receives none, cases of this kind are on record. Chaussier met with the *left* lung much more distended than the right in the bodies of children that had survived birth some hours. (Capuron, 'Méd. Lég. des Accouchemens,' p. 411.) The general opinion is, that the right lung receives air more readily than the left, owing to the larger size and more direct course of the right bronchial tube.

Evidence from certain changes in the body.—In a child that has been born alive, or has survived its birth for a period of from twelve to twenty-four hours, that portion of the umbilical cord which is contiguous to the abdomen undergoes certain changes: thus it dries and becomes slowly shrivelled, and in from three to five days it separates from the body with or without cicatrization.

The annexed illustration (fig. 157) represents the attachment of the umbilical cord or navel-string to the abdomen in a new-born child, the cord having been tied after birth in the usual way. The cord does not separate at the part which is tied, but close to the abdomen. It separates generally within five days, by a process of sloughing, the skin connected with the dead portion of cord presenting a red line, arising from capillary congestion. During the separation of the navel-string the umbilical vessels are gradually closed. According to Billard, the obliteration of these vessels is effected in a peculiar manner. The calibre diminishes as a result of a concentric thickening of the coats, so that, while the vessel retains its apparent size, its cavity is gradually blocked up. A quill would represent the form of the vessel in the fœtal state, and a tobacco-pipe in the obliterated state. It is only by cutting through the vessel that the degree of obliteration can be determined.

Fig. 157.



Appearance of the Umbilical Cord in a New-born Child.

a Its connection with the skin of the abdomen.

b The point at which the ligature was attached after birth.

c The point at which the cord separates from the body.

The state of the *umbilical cord* has often furnished good evidence of live-birth, when the other circumstances of the case were inadequate to furnish decisive proof. In the following instance, for the particulars of which I am indebted to Mr. French, it might have been suspected, but for the state of the cord, that the child had been still-born, and that its lungs had been artificially inflated. In consequence of some suspicion respecting the cause of death, the body of a child had been exhumed soon after burial. It weighed nearly five pounds, and was eighteen inches long; the opening for the navel was exactly in the centre of the body. The hair on the scalp was about an inch in length, and plentiful; the nails reached to the extremities of the fingers and toes. There was no mark of violence about it. The *navel-string had separated* by the natural process, but the skin around it was not quite healed. The tendon of one of the muscles of the leg was prominent, and apparently contracted at the instep. The left testicle alone had descended into the scrotum —the right was still in the inguinal canal. This rendered it probable that the child had not quite reached maturity. It was by the peculiarity of the instep that the body of the child was identified. In the first instance the body of another child had been brought from the same burial-ground, but rejected, from the absence of this appearance of the foot. On opening the chest, the lungs were observed to be situated at the back part and not filling the cavity. They weighed together 861 grains — the right weighing 430, and the left 431 grains. The heart, thymus, and lungs were placed together on water, but

they immediately sank to the bottom. The lungs, when separated from the other organs, floated, but with a slight degree of buoyancy. Indeed, this was established by the fact that they sank with the heart and thymus attached. The lungs were cut into twenty-two pieces; three from the apex sank; the remaining nineteen pieces floated, and they were not made to sink by pressure. The foramen ovale was but slightly open and contracted, as well as the ductus arteriosus, to about one-half of the fœtal diameter. The bladder was perfectly empty—the intestines contained only mucus. The conclusions at the inquest were—1. That the child had been born alive, and had lived certainly not less than three days, and probably longer. 2. That respiration during that time had been but imperfectly established. 3. That in all probability the child had died a natural death. The conclusions were well warranted by the medical facts. Experiments on the lungs were here not absolutely necessary, owing to the state of the umbilical cord. It might have been objected to any inference from the condition of these organs, that the facts were explicable on the supposition of their having been artificially inflated. The case, therefore, furnishes another proof of the ease with which a speculative objection on this ground may be set aside. It was subsequently proved that the child had lived eight days after birth.

The changes in the umbilical cord, when found, especially its separation and cicatrization, clearly prove that a child has survived its birth, whatever may be the results of experiments on the lungs; but the difficulty is, that they require some days for their production, and in practice it is necessary to procure some sign of survivorship of only a *few minutes*, or at furthest of a *few hours*. The same remark applies to the *exfoliation of the cuticle* in a new-born child: such a condition of the skin can rarely be found in cases of infanticide. The absence of meconium from the intestines, and of urine from the bladder, are not proofs of live-birth, for these may be discharged during birth, and yet the child not be born alive.

State of the skin.—In the greater number of new-born children, the skin has a dark-red colour, probably owing to the first effect of the atmosphere upon it. Within an hour it begins to get of a lighter red, and so it remains for one or two days. According to Dr. Elsässer, it becomes again darker about the end of the second or on the third day, and is then of a brownish-red colour. This lasts for three or four days, unless a yellowness appears from jaundice. It is then more or less yellow. It is about the sixth or seventh day that the skin acquires a reddish-white colour, such as it afterwards retains. (Henke's 'Zeitschrift der S. A.' 1849, 2, 223.)

Evidence from changes in the heart and fœtal vessels. Docimasia circulationis.—It has been supposed that the state of the ductus arteriosus, ductus venosus, and foramen ovale would aid a medical jurist in forming an opinion whether a child had survived its birth. In general, as a result of the establishment of respiration, it is found that the communication between the auricles of the heart by the foramen ovale becomes closed; and that the two vessels, after gradually contracting, become obliterated, or are converted into fibrous cords. Whatever may be the conclusions from experiments on the lungs, it has been contended that the closure of the foramen and of these vessels would infallibly indicate that a child had breathed. This inference, however, has been too hastily drawn. Recent researches have shown that there are some serious objections to any conclusions based on the state of these fœtal vessels; their closure, as a natural process, always takes place slowly, and sometimes is not completed until many years after birth. Thus, then, in the generality of cases of infanticide, in which necessarily the child survives but for a short period, no evidence of the fact will be procurable from an examination of the heart and fœtal vessels.

Ductus arteriosus (*Arterial duct*).—The ductus arteriosus is a vessel about half an inch long, which in the fœtus forms a direct communication between the right ventricle of the heart and the aorta; it conveys the larger proportion of the blood from the heart to the aorta without passing through the lungs. So soon as respiration is established, its function is at an end, and it then begins to close. In the annexed illustration, fig. 158, the situation and direction of this short vessel are seen: *a* is the aorta; *p* is the pulmonary artery issuing from the right ventricle of the heart; and *d* is the arterial duct, joining obliquely to the under portion of the aorta at the termination of the arch. In figs. 159 and 160 the different parts of the fœtal heart are seen in outline—in fig. 159 as they appear before, and in fig. 160 as they appear after, perfect respiration: 1, the aorta: 2, the pulmonary artery: 3 3, the right and left branches of the pulmonary artery going to the right and left lungs: 4, the ductus arteriosus, short and wide in fig. 159, and in fig. 160 contracted at the end where it joins the under part of the arch of the aorta. Professor Bernt of Vienna, who has made many observations on this subject, drew the following conclusions respecting the period required for the closure of the ductus arteriosus in children which have been born alive and have lived after birth:—1. If a child has lived only a *few seconds*, the aortal end of the duct appears contracted, and the vessel, instead of being cylindrical throughout, acquires the form of a truncated cone. 2. If a child has lived for *several hours*, or a *whole day*, the duct becomes again cylindrical, although shortened and contracted in diameter. Its size is about equal to a goose-quill; it is, therefore, much smaller than its root, and about as large as either of the two branches of the pulmonary artery, which have in the meantime become increased in size. 3. If a child has lived for *several days* or a *whole week*, the duct contracts to the diameter of a few lines,—about equal to a crow-quill, while the two branches of the pulmonary arteries are equal in size to a goose-quill. 4. The duct is found perfectly closed and quite impervious at a much later period, *i. e.* after the lapse of an uncertain number of weeks or even months. The annexed engravings (figs. 161, 162, and 163) will serve to illustrate the views of Professor Bernt. Fig. 161 represents the condition of the duct before respiration, and (as I have frequently had occasion to observe) after respiration has been established, and the child has died soon after

Fig. 158.

Front view of the heart of an infant five days old (from Sharpey's 'Elements of Anatomy.')

Fig. 159.

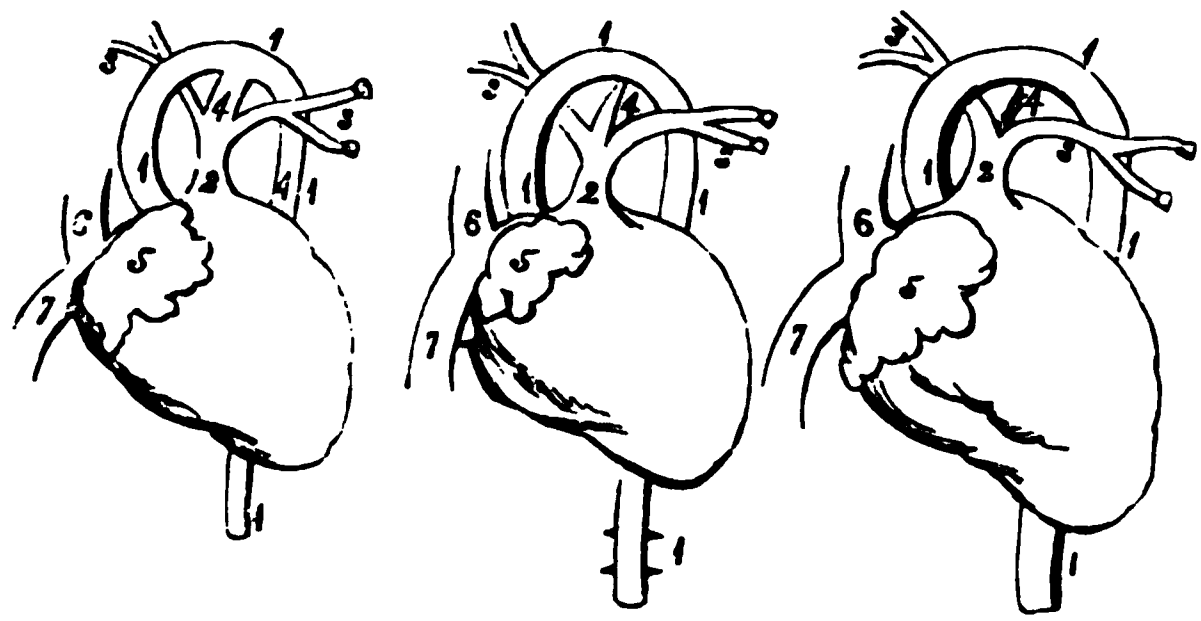
Heart of the new-born child with the ductus arteriosus in its fœtal state.

Fig. 160.

Heart of the child with the duct undergoing contraction as the result of the establishment of respiration.

birth. Fig. 161 shows the state of the duct in a still-born child, and in a child which has breathed imperfectly. Fig. 162 shows its contraction after perfect breathing, and an increase in the size of the pulmonary arteries (3 3). Fig. 163

Fig. 161. Fig. 162. Fig. 163.



The heart, with arterial duct open and contracted.

represents the closure and obliteration of the duct in advanced life. The figures of reference are the same as in figs. 159, 160; but in addition to these, the following references may be pointed out:—5, the situation of the right auricle; 6, the superior vena cava; and 7, the inferior vena cava. Among the exceptional conditions, Bernt remarks that the contraction may be first observed at the cardiac instead of the aortal end. In one instance of a still-born child, that was resuscitated and breathed feebly for a short time, and in which the thymus-gland was absent, the duct was of the size of a crowquill, as in children which have lived several days. He also states, on the authority of Joseph Schallgrüber, that the duct is sometimes entirely absent. ('Das Verfahren bey der gerichtlich-medicinischen Ausmittelung zweifelhafter Todesarten der Neugebornen,' von Joseph Bernt, s. 67, Wien, 1826: also, 'Systematisches Handbuch der gerichtlichen Arzneikunde,' s. 275, Vierte Auflage, Wien, 1834.)

The observations of Professor Bernt show that the natural closure of the duct is a comparatively slow process; but his conclusions are open to many more exceptions than those which he admits. Neither in his works, nor in those of other authorities on Medical Jurisprudence, is any case recorded which shows that the duct can become quite impervious from natural causes in a child which has survived its birth only a few hours.

Although the closure may take place as a result of the establishment of respiration, the time of its occurrence after birth is so uncertain as to render any evidence derivable from the non-closure altogether fallacious. I have examined the bodies of several children that have survived birth for some hours, and have not been able to discover any perceptible alteration in the diameter of the duct either at its aortal or cardiac end. In other cases partial contraction has been apparent. As the closure depends on a diversion of blood through the lungs, so it follows that, when respiration is feeble or imperfect, the duct will be found either of its natural patency, or, if closed, the closure must be regarded as an abnormal deviation. In the case of a child that died at the age of ten weeks, the ductus arteriosus was found to be freely open. ('Med. Gaz.' vol. 40, p. 994.) The researches of Dr. Norman Chevers have shown that there are numerous abnormal conditions which may give rise to non-occlusion of the duct. ('Med. Gaz.' vol. 36, p. 190, and vol. 38, p. 961; see also Orfila, 'Méd. Lég.' 1848, 2, 212.) From the facts collected by Dr. Chevers, it appears that the duct is liable to become contracted and *even obliterated* before birth, and before the child has actually breathed. In

these cases there has been, in general, some abnormal condition of the heart or its vessels; but this, even if it existed, might be overlooked in a hasty examination: hence the contracted or closed condition of the duct cannot be taken as an absolute proof that a child has been born alive or survived its birth. In January 1847, Dr. Chevers laid before the London Pathological Society the case of a child born between the seventh and eighth months, in which this vessel was almost closed, being scarcely one-twelfth of an inch in diameter, and capable of admitting only the shank of a large pin. The tissues of the duct had altogether an appearance of having undergone a gradual process of contraction; and its state proved that its closure had commenced previously to birth. In fact, the child survived only *fifteen minutes*; while, according to Bernt's rule, the medical inference might have been that this child had lived a week! It is important to remark, that in this case the heart and lungs were in their normal or natural state. ('Med. Gaz.' vol. 39, p. 205.) On the other hand, the open or pervious condition of the duct is consistent with the child breathing after birth; it sometimes remains pervious for many years. Dr. Peacock met with an instance in a man æt. 30, in whose body the duct was found pervious, and of sufficient capacity to give passage to a writing-quill. ('Med. Times and Gaz.' Nov. 1861; also a case by Dr. Fagge, 'Guy's Hosp. Rep.,' 1873, p. 23.)

The medical evidence derivable from the condition of the ductus arteriosus in a new-born child was submitted to a rigorous examination in the case of *Frith* (Ayr. Circ. Court of Justiciary, Oct. 1846.) This important case was tried before the late Sir J. Hope, Lord Justice Clerk of Scotland, to whose kindness I am indebted for a full and accurate statement of the evidence. The body of the child was found in a bag which had been buried in the sands on the seashore at Ayr, a little above highwater-mark, with such marks of violence about it as left no doubt that it must have been deliberately and intentionally destroyed. Independently of severe injuries to the throat externally, the mouth and throat internally were found to be so closely stuffed with tow and other substances that there was some difficulty in removing them. The body when found was much decomposed; the brain was pulpy, and the cuticle, as well as the bones of the skull, were easily separated. The weight of the body was seven pounds, and the child had the characters of maturity. The prisoner had, beyond doubt, been delivered of a child about three weeks previously to the discovery of this body. It was alleged that this was her child, and she was put on her trial for the murder.

The material question in the case was therefore one of identity. It depended on two sets of facts—ordinary and medical. The bag in which the body was found was part of a cloth-covering of a cushion belonging to the mother and grandmother of the child. This being made out to the satisfaction of the jury, the evidence so connected the prisoner with the dead body, that the medical facts raised in the defence became only of secondary importance. On an inspection of the body the following appearances were met with:—The heart and lungs weighed one ounce; the latter organs were collapsed; the right lung was considerably decomposed, and sank when placed on water; the left was of a red colour, firm in texture and floated on the surface when immersed in a vessel filled with water; but on pressure there was no crepitation. The right side of the heart was filled with coagulated blood, the foramen ovale being partly open, and the *ductus arteriosus* impervious. The liver was large and of a leaden hue, the ductus venosus almost obliterated, and meconium was found in abundance in the lower bowels. The medical men were of opinion, from the perfect conformation of the child's body and the above-mentioned appearances, that it had been born alive. The circumstantial evidence established that not more than *five hours* could have elapsed from

the birth of the child to the time at which its body was buried in the spot where it was subsequently found; and that, admitting it to have been born alive, there was the strongest reason to believe it did not survive its birth more than *ten minutes*. The results of experiments on the lungs were not alone sufficient to show that the child had been born alive. The organs were light, and not crepitant; the right lung was decomposed, and yet it sank in water, while the left was firm, and floated. The defect in this part of the medical evidence was, however (admitting the identity), removed by the evidence of a man lodging in the prisoner's house, who deposed that he distinctly heard the child cry. He slept in the same room with the prisoner on the morning on which she was delivered, and there does not appear to have been any reason to doubt his testimony.

Under these circumstances, the defence taken up was, that, considering the state in which the ductus arteriosus was found, this could not have been the child of the prisoner, because, if destroyed after being born alive (which was disputed), it must clearly have been destroyed immediately after birth. In that case the ductus arteriosus could not have been found impervious—*ergo*, the body found was not the body of the prisoner's child. It was contended that, according to all previous experience, the duct, except as a result of congenital disease, could not be found impervious in a child which had ceased to live within a *few minutes*, or even a few hours, after birth. One medical witness for the prosecution admitted that it required some days or weeks for the duct to become impervious: but a case was reported by Beck in which it had closed within a day. Another stated that it is generally a considerable time before the duct becomes closed. Medical evidence was given in defence, to the effect that the earliest case of closure was twenty-four hours; and from the state of the duct in this case, the witness considered that the child must have survived for one day at least, or not much less. Another witness stated that the discovery of the closure in a body would lead him to infer that the child had survived three or four days. According to this evidence the body produced could not have been that of the prisoner's child. The jury, however, found that the child had been born alive, but that murder had not been proven. (For reports of this case, see 'Med. Gaz.' vol. 38, p. 897; and 'Edin. Monthly Journal,' Nov. 1846, p. 385.)

It appears from the evidence given at the trial that circumstances quite irrespective of medical testimony proved that this child had been born alive, that it was the child of the prisoner, and that it could have survived its birth only a few minutes. The medical evidence left it undoubted that the child had been destroyed by violence. The facts that the mouth and throat were firmly packed with tow, and that there had been copious effusions of blood in the seats of violence, admitted of no other explanation. To what, then, was the early closure of the duct in this case to be referred? So far as I am aware, there is no instance on record of the arterial duct becoming *impervious* within a period of five or six hours (in this case only as many minutes could have elapsed) after birth. Its closure is naturally the result of free and perfect breathing in a healthy child: but the state of the lungs in this instance showed that respiration had neither been full nor complete. It is probable, therefore, that the case was similar to that described by Dr. Chevers, and that there was an abnormal condition of the duct. Either this must be assumed, or the closure must have depended on other causes than perfect respiration: but experience shows, as a general rule, that it proceeds *pari passu* with this process.

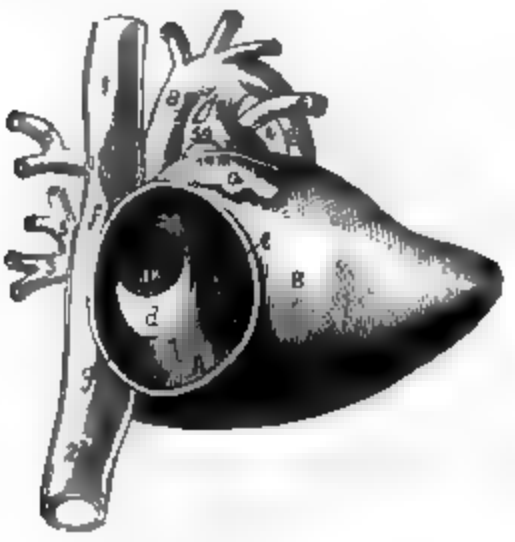
Admitting that this abnormal state of the duct, *i.e.* its closure previous to birth, is in general accompanied by malformation either of the heart or of the great vessels connected with it, yet Dr. Chevers' case, already related, proves that this is by no means a necessary accompaniment. Hence, considering the

serious responsibility attached to a medical opinion in a case of child-murder, the better rule will be to place no confidence on a contracted condition of this duct as evidence either of live-birth or of the time during which the child has lived. It can only have any importance as evidence when the death of a child speedily follows its birth; and these are precisely the cases in which a serious fallacy is likely to arise, for the contraction or closure may be really congenital, and yet pronounced normal. If a child has lived for a period of two or three days (the time at which the duct naturally becomes contracted or closed), then evidence of live-birth from its condition may not be necessary: the fact of survivorship may be sufficiently apparent from other circumstances. Hence, this species of evidence is liable to prove fallacious in the only instance in which it is required, and the case of *Frith* shows the dangerous uncertainty which must attend medical evidence based on the closed condition of the duct.

Ductus, or canalis venosus.—This is a branch of the umbilical vein which goes directly to the inferior vena cava: there is not, so far as I know, any instance of the obliteration of this vessel previous to birth. When respiration is fully established, it collapses, and becomes slowly converted, in a variable period of time, into a ligamentous cord or band, which is quite impervious. There is no doubt that in those cases in which it is stated to have become obliterated in children that could have survived birth only a few minutes or hours, the mere collapse of the coats has been mistaken for an obliteration of the canal. It is probably not until the second or third day after birth that its closure begins, although nothing certain is known respecting the period at which it is completed. The condition of this vessel, therefore, can throw no light upon those cases of live-birth in which evidence of the fact is most urgently demanded.

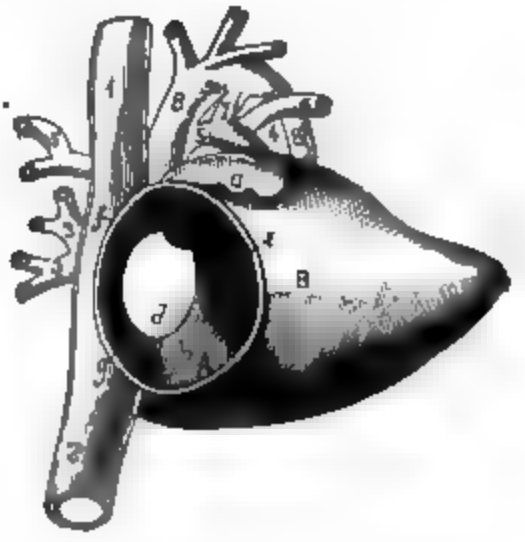
Foramen ovale.—This is a large oval opening placed at the lower and back part of the partition between the right and left auricles of the heart. It is considered to attain its greatest size at about the sixth month. It is represented in the following illustrations open and closed. Fig. 164—A, cavity of the right auricle laid open: B, situation of the right ventricle: *a*, the right auricle: *b*, the

Fig. 164.



The mature foetal heart, showing the foramen ovale open before respiration.

Fig. 165.



The heart of the child, showing the foramen ovale nearly closed by its valvular membrane after respiration.

(Bock, 'Gerichtl. Sectionen des Menschlichen Körpers.')

partition between the right and left auricles: *c*, the foramen ovale or opening between the two auricles, partly closed by the valve *d*. In fig. 165 it will be observed that the valvular membrane *d* almost entirely closes the aperture: *e*, opening into the right ventricle: *f*, opening of the superior vena cava into the upper part of the right auricle: *g*, opening of the inferior vena cava into

the lower part of the same auricle: 1, the superior vena cava: 2, the inferior vena cava: 3 3, the two right pulmonary veins: 4, trunk of the pulmonary artery, with its two branches; 5 the right, and 6 the left, pulmonary artery: 7, the arterial duct: 8, the aorta.

At an early period of fœtal life, there is no valve to the foramen ovale. About the twelfth week the valve rises upon the left side of the entrance of the vein, which thus comes to open into the right auricle. The separation of the two auricles is at the same time rendered more complete by the gradual advance of the valve over the foramen ovale, but the passage nevertheless continues open until after birth. Another valvular fold is formed on the right of the opening of the inferior cava, between it and the superior cava. This is called the Eustachian valve; it is represented by the letter *d* in the engravings.

As a general rule, this valvular opening between the right and left sides of the heart, exists during fœtal life, and becomes gradually closed after the establishment of respiration. I have, however, found it repeatedly open in children that had survived birth several hours; and, as it will be hereafter stated, the period of its closure is as variable as in the case of the ductus arteriosus. Hence, it is not capable of supplying with certainty evidence of live-birth, in those instances in which this evidence is most required. According to Billard, the foramen becomes closed between the second and third days; but there are numerous cases in which it is found not closed at much later periods after birth. Dr. Handyside states that it is more or less open in one case out of eight. In 1838 two subjects were examined at Guy's Hospital, one aged fifty, the other eleven years, and in both the foramen was found open. There is, however, another serious source of fallacy, which must be taken into consideration; the closure of the foramen ovale has been known to occur as an abnormal condition previously to birth and the performance of respiration. One case is mentioned by Capuron ('Méd. Lég. des Accouchmens,' p. 337), and another is reported in the 'Medical Gazette' (vol. 38, p. 1076). Other instances of this abnormal condition are adverted to by Dr. Chevers ('Med. Gaz.' vol. 38, p. 967); and it appears that in these the arterial duct remained open, in order to allow of the circulation of blood not only before but subsequently to respiration. The children rarely survive birth longer than from twenty to thirty hours. Dr. Chevers justly observes:—'Cases of this description are of great importance in a medico-legal point of view, as they fully disprove the opinion maintained by many anatomists, that obliteration of the foramen ovale must be received as certain evidence that respiration has been established. It is assuredly impossible to deny that in the heart of a child which has died within the uterus, and has been expelled in a putrid condition, the foramen ovale may be found completely and permanently closed. In such cases as these it would, however, probably be always possible to determine, by an examination of the heart and its appendages, that the closure of the foramen had occurred at some period antecedent to birth.' Still it would be unsafe in practice to rely upon the closure of this aperture as a proof of live-birth, in the absence of other good evidence: and in no instance can its patency be regarded as a proof that a child has come into the world dead. Dr. Kidd met with the case of a new-born child, in which a thick layer of lymph had been deposited across the aperture, so as nearly to block it up, and the ductus arteriosus was completely closed: the child could not have survived its birth more than a few hours ('Assoc. Jour.' Feb. 4, 1853, p. 104). This deposit of lymph is a condition not usually found. Dr. Peacock considers that the foramen is closed by the contraction of the muscular fibres of which the valve is constituted. In a medico-legal point of view, therefore, the patency or closure of this aperture possesses no longer any importance. ('Assoc. Jour.' Feb. 25, 1853, p. 177.)

As a general rule, these peculiar parts of the fœtal circulation are rarely

obliterated by a normal process before the eighth or tenth day after birth. The obliteration, according to Bernt and Orfila, takes place in the following order:—1. The umbilical arteries; 2. The ductus venosus; 3. The ductus arteriosus; and 4. The foramen ovale. (Orfila, 'Méd. Lég.' 1848, 2, 210.)

The circumstances connected with the closure of these fœtal vessels have been statistically investigated by Dr. Elsässer. Among 70 still-born children they were found open in 69. Among 300 children who died soon after birth, 80 out of 108 prematurely born and living from one to eight days, presented all the passages open: 127 out of 192 infants born at the full time had all the passages open, but partly contracted. The ductus arteriosus was open in 55 cases, and completely closed in 10 cases; the ductus venosus was open in 81, and completely closed in 37 cases; while the foramen ovale was open in 47, and completely closed in 18 cases only. These facts, according to Dr. Elsässer, prove that the vessels peculiar to the fœtal circulation remain open as a rule for some time after birth, and that it is not possible to determine accurately, by days, the period of their closure. This physiologist remarked that the closure commenced and was often completed in the ductus venosus, before it manifested itself in the other vessels. The complete closure, in by far the greater number of cases, takes place within the first six weeks after birth, and the instances of obliteration before birth, or before the period mentioned after birth, must be regarded as rare exceptions. ('Med. Times and Gaz.' May 21, 1853, p. 530.)

The result of this inquiry respecting Professor Bernt's *docimasia circulationis* is essentially negative: it either proves nothing, or it may lead the medical witnesses into a fatal error. It has been the more necessary to point out the serious fallacies to which it is liable, because hitherto medical jurists have been disposed to place great reliance upon it, in cases in which medical evidence from the state of the lungs was wanting. The necessity of these facts being known, is shown by the case which occurred at Ayr (*ante*, p. 369), in which great reliance appears to have been placed upon the following statement by Dr. Beck:—'If, therefore, the ductus arteriosus be found cylindrical in its shape, and not contracted towards the aorta, and if it equal in size the trunk of the pulmonary artery, the inference would be that the child was not born alive. On the other hand, if the ductus arteriosus be contracted towards the aortal end, and if its size be much less than the trunk of the pulmonary artery, the inference would be that the child had been born alive.' (Beck's 'Med. Jur.' 5th ed., p. 251.) From a consideration of the preceding facts, it will be seen that such inferences might seriously mislead a Court of Law.

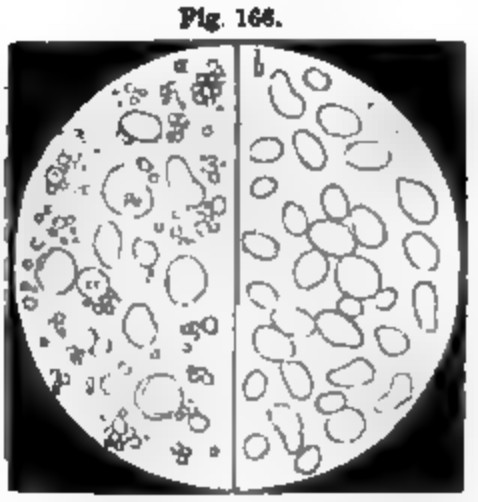
CHAPTER 78.

ON THE PROOFS OF A CHILD HAVING BEEN BORN ALIVE—EVIDENCE FROM THE DISCOVERY OF FOOD IN THE STOMACH—CHEMICAL AND MICROSCOPICAL TESTS FOR STARCH SUGAR MILK BLOOD AND MECONIUM—EVIDENCE FROM FOREIGN SUBSTANCES IN THE AIR-PASSAGES—FROM THE MODE OF BIRTH—GENERAL CONCLUSIONS.

Evidence from the state of the alimentary canal.—Good evidence of live-birth may be sometimes derived from the discovery of certain liquids or solids in the stomach and intestines, such as blood, milk, or farinaceous or saccharine articles of food; for it is not at all probable that these substances should find their way into the stomach or intestines of a child which was really born dead.

1. *Starch.*—In the case of a new-born child, the late Dr. Geoghegan discovered, by the application of iodine-water, the presence of farinaceous food in the contents of the stomach; hence the question of live-birth was clearly settled in the affirmative. On another occasion Dr. Francis employed this method of testing with satisfactory results, in a case in which the investigation was beset with unusual difficulties. He was required by the coroner to examine the body of a new-born child, found under suspicious circumstances. The examination of the lungs left no doubt that respiration had taken place; and the fact that the child had been born alive was fully established by the discovery in the stomach of a small quantity of farinaceous food. On digesting in distilled water a fragment of the pulp found in this organ, and adding a drop of solution of iodine, an intense indigo-blue colour appeared immediately. The application of this chemical test, therefore, removed any doubts which might have been entertained on the question of live-birth. ('Med. Gaz.' vol. 37, p. 460.) The quantity of starch present may, however, be too small to produce with water, a solution which would be coloured by iodine in the manner described. A portion of the contents of the stomach should then be placed on a glass slide, diluted with a little water if viscid, and examined under the microscope with a power of about 300 diameters. The granules (if present) may then be distinctly seen, having the shape peculiar to each variety of starch, and not unfrequently mixed with oil-globules and epithelial scales derived from the mucous membrane. By the addition of iodine-water their shape and size will be brought out by the intensely blue colour which they acquire. Blue fragments of an irregular shape indicate the presence of bread. The annexed engraving (fig. 166) represents two varieties of starch, either of which may be found in the stomachs of infants: in *a* the rounded granules of wheat-starch are represented, and in *b* the ovoid granules of arrowroot. The micrometrical measurements of these granules show, for those of wheat, which are irregularly spherical, diameters varying from 1-9000th to 1-1125th of an inch in size. Many have an average diameter of 1-3000th of an inch. The ovoid granule of arrowroot is 1-900th of an inch in length, and 1-1800th of an inch in width.

Fig. 166.



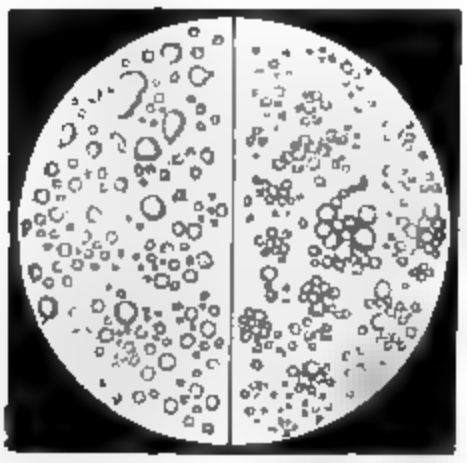
Granules of wheat-starch. Granules of arrow-root.
Magnified 319 diameters.

2. *Sugar.*—In one case which I was required to examine, the presence of sugar was readily detected in the contents of the stomach by the application of Trommer's test. In order to apply this test, a few drops of a weak solution of sulphate of copper should be added to a portion of the cold concentrated aqueous extract of the contents of the stomach. An excess of a solution of pure potash is then added, and the liquid boiled. If sugar be present, the suboxide of copper is immediately precipitated of a yellowish or reddish colour. With white sugar the same decomposition is effected, but more slowly. If starch be present, black oxide of copper may be thrown down, but there will be no production of a red precipitate. The formation of the red oxide of copper under these circumstances, proves that some saccharine substance is present. In reference to the application of the sugar-test, however, it must be remarked that starch is easily convertible into sugar by a chemical action of saliva or mucus, so that the test may appear to indicate sugar in small quantity, when the result may be really due to the presence of some converted starch.

3. *Milk.*—This liquid may be found in the stomach of a new-born child; it

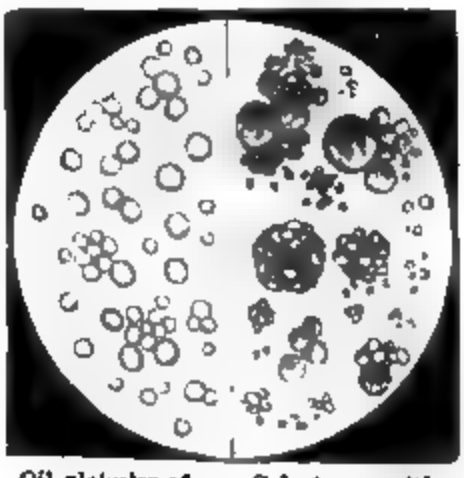
may be identified microscopically in the fluids of the stomach by the numerous and well-defined oil-globules which it contains. It is not possible to distinguish human from cow's milk under these circumstances. In both, the globules which are spherical in all aspects, are remarkable for their transparency in the centre,

Fig. 167.



Oil-globules of Human Milk. Oil-globules of Cow's Milk.
Magnified 819 diameters.

Fig. 168.



Oil-globules of Human Milk. Colostrum with granular bodies.
Magnified 480 diameters.

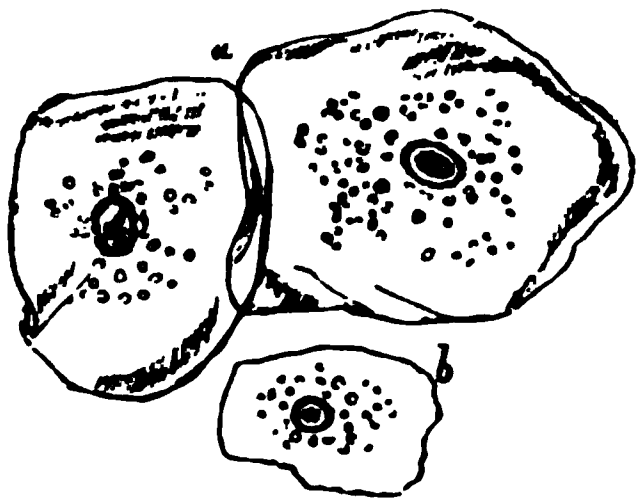
and their dark margins. They vary considerably in size. I have found those of the cow to have by measurement the following diameters:—Maximum, 1–2200th of an inch; minimum, 1–18000th; and medium size, 1–4500th of an inch. They are distinguished from blood-corpuscles by their shape and lustre, and from starch-granules by the fact that they are not coloured or changed by iodine-water. *Colostrum* is the name applied to the milk first secreted after delivery; it contains, in addition to oil-globules, numerous spherical granular bodies (fig. 168, *b*). When milk is present, *lactine* or sugar of milk is generally found in the contents of the stomach by the appropriate sugar-test (*supra*). The casein, or solid principle of milk, precipitates oxide of copper from the sulphate; but on adding an excess of a solution of potash the oxide is redissolved, forming a purple or violet-coloured solution. It is rapidly coagulated by the digestive principle (pepsine) contained in the gastric juice, so that the casein may be found in small soft masses adhering to the lining-membrane of the stomach. It should be observed that albumen forms a deep violet-coloured solution with sulphate of copper and potash, but the red suboxide of copper is not precipitated on boiling unless sugar is mixed with it.

4. *Epithelial scales.*—The epithelial scales commonly found associated with articles of food in the stomach are of various shapes and sizes; they are flat, oval, or rounded, and sometimes polygonal. They are nucleated, and from their pavement-like appearance they are called 'tessellated.' In fig. 169, *b* (p. 376), an epithelial scale from the mucous membrane of the inside of the mouth, is represented magnified 570 diameters. In the long axis it was the 1–500th of an inch, and in the shortest 1–900th of an inch in diameter. The central nucleus was 1–4000th of an inch in diameter, and the small granules around it 1–9000th of an inch. These epithelial scales are very numerous, much intermixed, and so transparent that they are often only distinctly seen at the edges, which occasionally are folded or slightly turned over.

Besides the substances mentioned, other solids and fluids, such as blood and meconium (the fæcal discharges of the fœtus) may be found in the stomach of a new-born child, and a question may arise whether their presence indicates that the child was fully born. It is not impossible that a child might be fed and exert a power of swallowing when its head protruded from the outlet, and its body was still in the body of the mother. Children have been known to

exert a power of sucking or aspiration under these circumstances, and with this a power of swallowing might be exercised. In defending a prisoner on a charge of child-murder, counsel would scarcely resort to a defence of this kind. That the starch, sugar, or milk, &c. found in the stomach, should have been given to a child when its body was only half-born, is so improbable an hypothesis that the most inexperienced lawyer would hardly resort to it to account for the presence of food in this organ. When the substances found in the stomach are not in the form of food, but are fluids connected with the child or the mother, the case is different. These may penetrate into the lungs or stomach during birth, either by aspiration or the act of swallowing: they thus indicate that the child was living, but they do not necessarily show that its body was entirely in the world when they were swallowed.

Fig. 169.

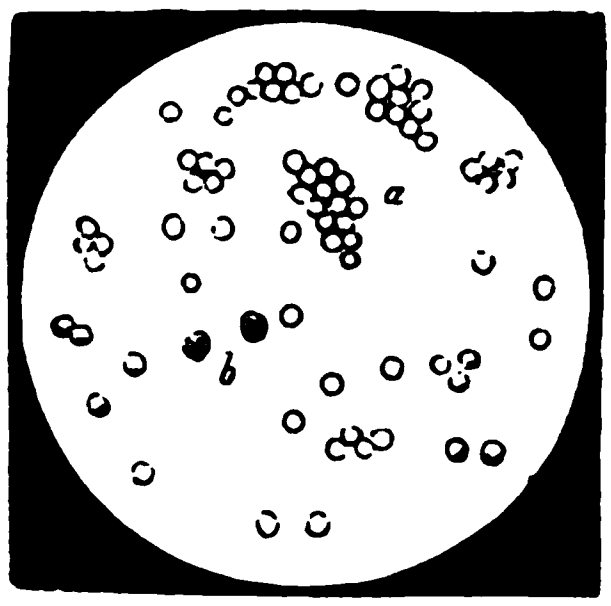


Tessellated epithelial scales, highly magnified.

a from Sharpey: *b* from observation.

5. *Blood.*—An instance is related by Dr. Döring in which a spoonful of coagulated *blood* was found in the stomach of a new-born child. The inner surfaces of the gullet and windpipe were also covered with blood. Dr. Döring inferred from these facts that the child had been born alive; for the blood in his opinion could have entered the stomach only by swallowing, *after* the birth of the child and while it was probably lying with its face in a pool of blood. Taken alone, however, such an inference would not be justifiable from the facts as stated. Blood might be accidentally drawn into the throat from the discharges of the mother during the passage of the child's head through the outlet, and yet the child may not have been born alive. The power of swallowing may be exerted by a child during birth either before or after the act of breathing. This power appears to be exerted even by the fœtus in utero.

Fig. 170.



Human blood-corpuscles.

Blood may be recognized in the contents of the stomach not only by the colour which it imparts to the mucous liquids present, but by the aid of the microscope, as well as by the Guaiacum process (vol. 1, p. 538). The annexed illustration (fig. 170), represents the blood-corpuscles as they may be seen under the microscope.

Dr. Robinson has made some researches on the contents of the fœtal stomach during uterine life. He finds that the substances which naturally exist in the stomach of a fœtus before birth are of an albuminous and mucous nature. His observations were made on the stomachs of two human fœtuses, and on those of the calf, lamb, and rabbit. The conclusions at which he arrived were:—1. That the stomach of the fœtus during the latter period of its uterine existence, invariably contains a peculiar substance, differing from the uterine liquid (liquor amnii), and generally of a nutritious (?) nature. 2. That in physical and chemical properties, this substance varies in different animals, being in no two species precisely similar. 3. That in each fœtal animal the contents of the stomach varies at different periods; in the earlier stages of its development consisting chiefly of liquor amnii, to which the other peculiar matters are gradually added. 4. That the liquor amnii continues to be swallowed by the fœtus up to the time of birth, and consequently after the formation of

these matters, and their appearance in the stomach. 5. That the mixture of this more solid and nutritious substance with the liquor amnii constitutes the material submitted to the process of chymification in the fœtal intestines. He considers the contents of the alimentary canal to be chiefly derived from the salivary secretion, and that gastric juice is not secreted until after respiration has been established. The medical jurist will perceive, therefore, that the discovery of farinaceous food, milk, or sugar in the stomach will furnish evidence of birth, since substances of this kind are not found naturally in this organ.

Dr. H. J. Gosse states that in the early stage of uterine life the alimentary canal contains merely a mucous liquid. At the third month there is a more copious secretion: a clear non-albuminous acid liquid is found in the stomach, and a soft chymous liquid is present in the small intestines. Up to the fifth month the small intestines contain meconium of a greyish colour. After this period the meconium becomes gradually of a deeper colour, and it passes into the large intestine. When the child has attained uterine majority, the meconium in the jejunum is whitish; in the ileum, yellow; in the cæcum, greenish-yellow; in the ascending colon, green with less yellow; and in the rectum, green-black, like poppy-juice (hence the name, from μεκων, 'a poppy'). It is a mixture of the constituent parts of the bile-coloured granules, of epithelium from the mucous membrane lining the intestines, and of mucous matters probably derived from a destruction of the epithelial cells. Meconium is generally discharged from the bowels of a child within forty-eight hours after birth, or at the latest on the third day. It then appears of the consistency of honey, of a very dark-green (almost black) colour, with very little yellow colouring-matter in it. It has no disagreeable odour. Its specific gravity is 1·148. ('Des Taches au Point de vue Medico-légale,' 1863, p. 75.)

6. *Meconium.*—This name is applied to the excrementitious matter produced and retained in the intestines during fœtal life. It may be found in the stomach of a new-born child, and a question will thence arise whether its presence there should be taken as a proof of entire live-birth. It may be discharged from the child during delivery, in cases in which there is a difficult or protracted labour. In the act of breathing it may enter the throat with other discharges, and thus be found in the stomach. That a breathing child can thus swallow meconium cannot be disputed, but, assuming that in the body of a child which has not lived to breathe this substance is found in the air-passages and stomach, how is the conclusion affected? In the following case Dr. Fleischer was required to examine the body of a new-born child which was said to have been born dead. He found meconium in the large intestines (the colon and rectum), and a greenish-yellow-coloured liquid in the cavity of the stomach, in the larynx, windpipe, and gullet. In the air-passages it was in well-marked quantity. The lungs contained no air, but possessed all the usual fœtal characters. When cut into pieces and placed on water, all the pieces sank. It appeared that a woman was present at the birth, who observed that the child did not breathe, but was born dead. It was not bathed or washed, and no air was blown into its lungs. From the general appearance and properties of the liquid found in the stomach and air-passages, Dr. Fleischer had no doubt that it was meconium from the intestines of the child. It could not have been swallowed after the child was born, but must have been accidentally drawn into its throat by efforts to breathe during birth. Some of the meconium had probably been discharged from the bowels of the child during labour, and as the mouth passed over this liquid a portion was drawn into the throat by aspiration. When once there, the instinctive act of swallowing would immediately convey a portion of it into the stomach. As the facts connected with the birth were well known, this appears to be the only reason-

able explanation. (See report of the case in Casper's 'Vierteljahrschrift,' 1863, 1, 97; also for another case, 'Med. Times and Gazette,' August 3, 1861, p. 116.)

The presence of fluids, therefore—such as *blood*, *meconium*, or the watery discharges attending delivery—in the stomach and air-passages of a new-born child, does not prove live-birth, but merely indicates the existence of some living actions in the child at or about the time of its birth. In a case which occurred to Dr. Ramsbotham, a woman was suddenly delivered of a child while sitting over a slop-pail of dirty water. On examining the body, it was obvious that it had not breathed. There was no air in the lungs, but a quantity of dirty water like that in the pail was found in the stomach. This could have entered the organ only by the act of swallowing, and, in Dr. Ramsbotham's opinion, the child had swallowed the liquid under some fœtal attempts to breathe. The coroner who held the inquest directed the jury that the child was born dead; but most physiologists will consider that the power of swallowing cannot be exerted by a dead child; and as its body must have been entirely delivered in order to have fallen into the liquid, there was proof that it had been born living, and that in this instance it had died after it was entirely born, by the prevention of the act of breathing. (See 'Live-birth,' pp. 209, 341.)

Fig. 171.

Microscopical appearances of Meconium;
a crystals of cholesterine; b epithelial scales; c masses of green colouring-matter of bile (biliverdin); d e granules.
Magnified 400 diameters.

The *meconium* may be generally recognized by its dirty-green colour and general appearance, as well as by the absence of any offensive odour, which it does not acquire until after the third or fourth day from birth, when it becomes mixed with feculent matter. Its microscopical characters are represented in the annexed engraving. In the air-passages it is sometimes associated with vernix caseosa, and hairs derived from the skin. ('Med. Times and Gazette,' June 1, 1861, p. 591, and Aug. 3, 1861, p. 117; see also 'Ann. d'Hyg.' 1855, 2, 445.)

But little need be said on its chemical properties; still, as the detection of stains of meconium on clothing may occasionally form a part of the medical evidence, a few observations are here required. The stains which it produces are of a brownish-green colour, very difficult to remove by washing. They stiffen the stuff, and are usually slightly raised above the surface, without always penetrating it. Meconium forms with water a greenish-coloured liquid, having an acid reaction: a boiling heat does not affect the solution. Nitric acid, and sulphuric acid and sugar yield with it the green and red-coloured compounds which they produce with bile. Cholesterine may be separated from it by hot ether.

It may be remarked, in reference to stains produced by the fæces of a child which has survived birth, that until the fifth or sixth day they retain a dark-green or greenish-yellow colour. On the seventh day after birth, they generally acquire a bright-yellow colour, like that of the yolk of an egg; and this colour, if the child is in health, they will retain during all the time that it is suckled.

The presence of stains of meconium on the clothing of a child has been considered, in the absence of any evidence from the lungs, to furnish sufficient proof that a child has been *born alive*. In March 1850 the body of a child, completely dried or mummified, was found concealed in a hollow space in the chimney of a house. From the dry state of the body, it had apparently

been there for a considerable time. Dr. Bergeret, who was required to make an examination of the body, found it to have the characters of a mature child of the female sex. It was wrapped in linen, which was marked by two kinds of stains, some of a deep-green almost black (meconium), and others of a reddish-brown colour (blood). The internal organs had been completely destroyed, chiefly by larvæ of insects, of which many of the dried chrysalis cases were found. The skin was dried to a parchment condition. Was this child born alive? As the lungs were destroyed, Dr. Bergeret directed his attention to the meconium-stains on the linen; and he concluded from these that, had the child died before or during labour, the greater part of the meconium would have been discharged before birth. Assuming that a quantity of it still remained in the bowels, this could not have been discharged from them, as a result of vital contractility after death. Further, the portion of linen around the nates of the child was not stained, hence there had been no discharge *post mortem*, after the dead body had been placed in the chimney—leading therefore to the conclusion that the linen had been stained by the natural discharge from a child born living, and previous to the disposal of its body. Dr. Bergeret also inferred, from the large quantity of meconium, that it had been discharged during a state of severe suffering resulting from a violent death. ('Ann. d'Hyg.' 1855, 2, 442.) He gave his opinion—1. That this mummy-child was mature; 2. That it was born alive, and that it died from violence soon after its birth; and; 3. That its death probably took place in the summer of 1848, *i.e.* about two years before the discovery of the body. The latter conclusion was based on entomology, *i.e.* on the condition of the chrysalis-cases and the larvæ of the *musca carnaria* found in the cavities of the body. The facts were such that, in Dr. Bergeret's opinion, a shorter period than two years would not account for the state in which the insects were discovered. A woman who had been, it was supposed, delivered of a child in November 1848, was tried upon this evidence, before the Jura Court of Assizes, on a charge of child-murder. The jury acquitted her. In England such a case would not have gone beyond a coroner's inquest. There was no evidence of live-birth, for the stains of meconium on the linen might be accounted for irrespective of this theory. There was no evidence of murder, for all the facts admitted of an explanation on the assumption that the child had been either still-born, or, if born living, that it had died from natural causes soon after its birth, and that its body had been concealed in the spot where it was found.

7. *Foreign substances in the air-passages and stomach.*—Dr. Maschka met with the following case:—A woman was secretly delivered of a child, which she alleged was born dead, but she did not produce its body until after the lapse of fourteen days, when it was found in such a state of putrefaction that no satisfactory evidence of live-birth could be obtained from the lungs. These organs, as well as the heart and liver, contained small bladders of air from putrefaction and floated on water. On slight compression, the lungs sank. The air-passages, œsophagus, and stomach contained sand and excrementitious matter, which was pressed out of them on a section being made. The air-passages were so blocked up as to furnish a sufficient cause for the prevention of breathing and for death from suffocation. The woman, when charged with the murder of her child, confessed that she was suddenly delivered while having, as she supposed, an evacuation—that she fainted, and when she recovered, she found she had been delivered of a child, which had fallen into the privy and was quite dead. The medical evidence was in accordance with this condition of the body. Dr. Maschka concluded that the child had come living into the world, and had died from suffocation. He drew this inference from the discovery of excrement and sand in the air-tubes, lungs, and stomach. He considered, from the appearances, that in the aspiratory effort to breathe (a living action)

the child had drawn these substances into the lungs, and further, that they could have found their way into the stomach only by the act of swallowing. These actions could not have taken place until after birth, and in his judgment they clearly proved that the child had come living from the body of the mother. (Horn's 'Vierteljahrs.' 1865, 1, 37.)

The inference of live-birth in this case was based on good physiological grounds. The discovery of foreign substances which from their nature could not have entered the body during delivery is a good proof of entire live-birth, but we ought to be well assured that such substances could not have accidentally found their way into the body after birth. Thus it might be suggested in defence that they had penetrated into the stomach and lungs as a result of putrefaction, if the body is immersed in liquid. It will be for the examiner to determine how far this can explain the facts by a proper examination at the time. The discovery of excrementitious matter in the interior of the stomach and in the substance of the lungs was a strong proof that the child had exerted the living acts of swallowing and aspiration.

Dr. Maschka gives another case somewhat similar in its details (op. cit. p. 40). The body of the child, which was found in the soil of a privy, was putrefied, but the lungs had not undergone putrefaction. Both feet were wanting, and the bones of the legs were exposed, owing to the removal of the soft parts. There were no marks of murderous violence on the head, neck, or upper part of the body. About six inches of the navel-string were attached to the abdomen, and this had not been lacerated but sharply cut through. This observation was of importance, for it proved that the woman had not been accidentally delivered while sitting in the privy, or the cord would have been found lacerated.

The main questions were—Did this child come into the word living, and was its death attributable to violent or accidental causes? On inspection, grains of sand and particles of coal were found upon the tongue, and in the fauces, larynx, trachea and its ramifications, as well as in the pharynx and œsophagus, the mucous membrane in these parts being of a brownish-red colour. The lungs were placed backwards in the chest, the sharp edges reclining on the sides of the pericardium; they had a bluish-brown colour behind, but they were of a light red with stellated patches of redness in front. The substance of the organs was not putrefied, it was elastic when pressed, and crepitated on being cut. They contained a moderate amount of blood. Both lungs floated on water entire and divided. The stomach contained an offensive dark-coloured fluid, mixed with grains of sand, pieces of coal, and other foreign matters. The conclusions drawn by Dr. Maschka were that this child was mature, that it had been born alive, the navel-string designedly cut, and its body afterwards thrown into the place where it was found, for the purpose of concealment.

The inference of the child having been born alive was based on the justifiable grounds that there had been incipient breathing or attempts at breathing; this was proved by the state of the lungs and the foreign substances found in the air-passages. There had also been the power of swallowing, the same substances having been found in the stomach. For however short a time, these conditions proved that the child had lived and had breathed after it was born. The cause of death was assigned to suffocation and the prevention of breathing.

A cautious application of these principles may be made in dealing with similar cases. In the last case there was the state of the lungs to help the conclusion. If the body of a child is so putrefied as to lay open the stomach and lungs so that foreign matters can have free access to them it would of course be unsafe to base an opinion on these conditions.

8. *Evidence from the mode of birth.*—It has been suggested that when a child is born by the feet, and there are full marks of respiration in the lungs, the mode of birth will at once establish that the body must have been entirely in the world in order that the breathing should have taken place. The late Dr. W. P. Herapath met with an instance of this kind in September 1858, and communicated the particulars to me. It is assumed that the head under these circumstances is born instantaneously, and that the child cannot breathe until the head is released from the outlet. Before such a conclusion can be drawn, there should be clear evidence that the child was actually born by the feet. Dr. Herapath has published a report of the case on which his opinion was requested, as well as the grounds on which he would rely to establish the fact that a child had been born by the feet. (For this I must refer the reader to the 'British Medical Journal,' May 15, 1859.)

The slightest consideration will show that the various signs of live-birth above described are weak, and of purely accidental occurrence. If a child is destroyed either during birth, or within a few minutes afterwards, there will be no medical evidence to indicate the period at which its destruction took place; the external and internal appearances presented by the body would be the same in the two cases. It is most probable that in the greater number of instances of child-murder, a child is actually destroyed either during birth or immediately afterwards; and, therefore, the characters above described can rarely be available in practice. If any exception be made, it is with respect to the nature, situation, and extent of marks of violence; but the presence of these depends on mere accident. Hence, then, we come to the conclusion, that although medical evidence can generally show, from the state of the lungs, that a child has really lived, it can rarely be in a condition to prove, in a case of infanticide, that its life certainly continued after its birth. We could only venture upon this inference when the signs of breathing were full and complete, or when some article of food was found in the stomach. Why the destruction of a child should be treated in the one case as a venial offence, and in the other as a capital crime, is one of those anomalies in our criminal jurisprudence for which it is impossible to account. The inference which we may draw from these observations is, that if positive proof of *entire live-birth* be in all cases rigorously demanded of medical witnesses on trials for child-murder, it is scarcely possible, when the prisoner is ably defended, that any conviction for the crime should take place. The only exception would be where a confession was made by the accused, or a murder was actually perpetrated before eye-witnesses. The numerous acquittals that take place on trials for this crime, in face of the strongest medical evidence of murderous violence inflicted on the body of the child, bear out the correctness of this opinion. A child is proved to have lived and breathed, but the medical evidence fails to show that the living and breathing took place or continued after its *entire* delivery. [For some judicious remarks on this defective state of the law, see 'Prov. Journ.' April 2, 1851, p. 182.]

Conclusions.—The general conclusions which may be drawn from the facts contained in this chapter, on the question whether a child has or has not been *born alive*, are as follows:—

1. That if the lungs are fully and perfectly distended with air by the act of breathing, this affords a strong presumption that the child has been *born alive*, since breathing during birth is in general only partial and imperfect.

2. That the presence of marks of severe violence on various parts of the body, if possessing vital characters, renders it probable that the child was entirely born alive when the violence was inflicted.

3. That certain changes in the umbilical vessels, and the separation by a

vital process and cicatrization of the umbilical cord, as well as a general peeling or scaling-off of the cuticle, indicate live-birth.

4. That the absence of meconium from the intestines and of urine from the bladder, are not proofs that a child has been entirely born alive, since these liquids may be discharged during the act of birth.

5. That the open or contracted state of the foramen ovale or ductus arteriosus furnishes no evidence of a child having been born alive. These parts may become closed and contracted *before birth*, and therefore be found closed in a child born dead; or they may remain open after birth in a child born living, even subsequently to the establishment of respiration.

6. That the presence of farinaceous or other food in the stomach, or of foreign substances swallowed, proves that a child has been entirely born alive.

7. That the presence of blood, meconium, vernix caseosa, or the discharges in the stomach and air-passages, does not necessarily prove that a child was born alive.

8. That, irrespective of the above conclusions, there is no certain medical sign which indicates that a child, that has died at or about the time of birth, has been *entirely* born alive.

CHAPTER 79.

RULES FOR DETERMINING THE PERIOD OF SURVIVORSHIP IN CHILDREN THAT HAVE BEEN BORN ALIVE—APPEARANCES INDICATIVE OF A CHILD HAVING LIVED TWENTY-FOUR HOURS—FROM TWO TO THREE DAYS—FROM THREE TO FOUR DAYS—FROM FOUR TO SIX DAYS—FROM SIX TO TWELVE DAYS—UNCERTAINTY OF MEDICAL EVIDENCE ON THE PERIOD WHICH HAS ELAPSED SINCE THE DEATH OF A CHILD—PROCESS OF PUTREFACTION IN THE BODIES OF NEW-BORN CHILDREN—EXAMINATION OF BONES.

If we suppose it has been clearly established that a child not only lived but was actually *born* alive, it may be a question whether it lived for a certain number of hours or days after it was born. The answer to this question may be necessary in order to connect the deceased child with the supposed mother. It has been remarked that scarcely any appreciable changes take place in the body of a living child until after the lapse of twenty-four hours; and these changes may be considerably affected by its degree of maturity, healthiness, and vigour. The following may be taken as a summary of the appearances observable in the body of a child that has survived its birth for the undermentioned periods:—

1. *After twenty-four hours.*—The skin is firm and less red than soon after birth. The umbilical cord is somewhat shrivelled, although it remains soft and bluish-coloured, from the point where it is secured by a ligature to its insertion in the skin of the abdomen. The meconium may be discharged: but a green-coloured mucus is found on the surface of the large intestines. The lungs may be more or less distended with air, although in a case of survivorship for a period longer than this, no trace of air was found in them. With regard to the state of the lungs, it should be remembered that when these organs are fully and perfectly distended, the inference is that the child has probably survived many hours; but the converse of this proposition is not always true. Several cases already reported show that when the lungs contain a small quantity of air, it does not follow that the child must have died immediately after it was born.

2. *From the second to the third day.*—The skin has a yellowish tinge, the

cuticle sometimes appears cracked, a change which precedes its separation in scales. (Devergie, vol. 1, p. 519.) The umbilical cord is brown and dry between the ligature and the abdomen.

3. *From the third to the fourth day.*—The skin is more yellow, and there is an evident separation of the cuticle from the skin of the chest and abdomen. The umbilical cord is of a brownish-red colour, flattened, semi-transparent, and twisted. The skin in contact with the dried portion presents a ring of vascularity or redness, gradually shaded off towards the abdomen. Dr. Geoghegan met with this appearance in two cases of still-born children, and I have also seen it in four cases in which the children were born dead. ('Guy's Hospital Reports,' April 1842.) The colon is free from any traces of green mucosity.

4. *From the fourth to the sixth day.*—The cuticle in various parts of the body is found separating in the form of minute scales or of a fine powder. The umbilical cord separates from the abdomen usually about the *fifth day*, but sometimes not until the eighth or the tenth day. The membranous coverings become first detached, then the arteries, and afterwards the veins. If the umbilical aperture is cicatrized and *healed*, it is probable that the child has lived from three weeks to a month after birth. The ductus arteriosus may be found contracted both in length and diameter; the foramen ovale may be also partly closed.

5. *From the sixth to the twelfth day.*—The cuticle will be found separating from the skin of the limbs. If the umbilical cord was small, cicatrization will have taken place before the tenth day after birth; if large, a sero-purulent discharge will sometimes continue to escape from it for twenty-five or thirty days. The ductus arteriosus is said to become entirely closed during this period; but this statement is open to exceptions, which have been elsewhere pointed out (*ante*, p. 869). It need hardly be observed that the body rapidly increases in size and weight when the child has enjoyed active existence.

On the whole, it will be seen that the signs of survivorship for short periods after birth are not very distinct. There is commonly no difficulty in determining the fact after the second day. The changes stated to take place in the umbilical cord during the first twenty-four hours may be observed in the *dead* as well as in the living child, and the other changes occur with much uncertainty as to the period. These are, however, I believe the principal facts upon which a medical opinion on such a subject can be based; and it is in some respects fortunate that great precision in assigning the time of survivorship is not demanded of medical witnesses. (See on this subject a paper by Dr. Elsässer in Henke's 'Zeitschrift der S. A.' 1842, vol. 2, p. 220; 'Ueber die Neugeborenheit.')

It is expected that a medical man will be able to distinguish between a newly-born child and one which has been born for several days, and evidence on this subject is occasionally required in reference to supposititious children. (See p. 233, *ante*). Those who attempt a fraud of this kind have sometimes been compelled to substitute a child two or three days old for one just born. A medical man called in to a woman after an alleged delivery in the presence of a nurse (perhaps an accomplice) is bound to exercise great caution. In the event of litigation at a subsequent date, he is expected to be able to inform a Court of the condition of the child when first seen by him and of the probable date of its birth. He will not be allowed to throw the blame of a mistake upon others. The temporary success or the failure in perpetrating a fraud of this kind will depend upon his observation of the facts.

Putrefaction in the body of a new-born child.—A practitioner may be further required to state *how long a period has elapsed since the death of a child.* The answer to the previous question was derived from the changes which take place in the body of a child during *life*, while, in relation to the present inquiry, we must look to those which occur in the body after *death*—

in other words, to the different stages of putrefaction. Before this process sets in, however, there are certain changes connected with the cooling of the body and the production of rigidity in the muscles which have been elsewhere described, (vol. 1, pp. 47–53). From its small mass the body of a new-born child will cool much more rapidly than that of an adult when exposed under similar circumstances. Rigidity may also take place quickly, and quickly disappear. When the body presents no sign of putrefaction externally—no greenness of the skin of the abdomen—these early post-mortem changes are the only data on which a medical opinion can be based. From the observations of Orfila, it would appear that the body of an infant putrefies more rapidly than that of an adult. ('Traité des Exhumations.') In forming a judgment on this point, due allowance must be made for the influence of temperature, humidity, and the free access of air (see vol. 1, p. 93, *ante*). If the body has been sunk in water, putrefaction takes place more slowly than usual, and the process is slower in running than in stagnant water. When the body is floating on the surface of water, so as to be at the same time exposed to air, then putrefaction takes place very rapidly: and this also happens when the body, after removal from water, has been exposed to the air for some time. Putrefaction is retarded when the deceased child has been buried in the ground in a box or coffin, unless the process had commenced prior to interment. When the body has been cut up and mangled before being thus disposed of, putrefaction takes place with much greater rapidity. (*Reg.* v. *Railton*, Stafford Winter Assizes, 1844.)

One of the effects of putrefaction is a desquamation or peeling off of the cuticle; but in drawing an inference from this appearance only, a medical jurist may be misled. Dr. Read, U.S., states that he met with a case of desquamation of the cuticle in a living new-born child. The woman was prematurely confined, in consequence of an accident. The hands and feet of the child when born were denuded of cuticle, which hung from them in shreds. The child was apparently at the eighth month, and lived twenty-four hours ('Amer. Jour. Med. Sci.' Oct. 1861, p. 583.) This, at any rate, shows that desquamation of the cuticle in a new-born child is not always a sign that it has been dead for a considerable length of time. All the other signs indicative of putrefaction would, in such a case, be absent, and from this fact a medical jurist would be able to draw a clear distinction.

In certain cases, where the body of a child has been long buried in the earth, the bones only may be producible. The questions that would be likely to arise here would be:—1. Whether the bones were those of a new-born child or of one that had survived its birth for some weeks or months. There will be no difficulty in coming to a conclusion on the first question (see vol. 1, p. 147), and the answer may at once put an end to the charge of infanticide. Dr. Behm, of Stettin, records a case of this kind. He concluded, from his examination, that the child, whose bones were submitted to him, had lived for six or eight months after birth, and that they had been buried for fifty years or longer (Horn's 'Vierteljahrs.' 1868, 1, p. 55.)

Conclusions.—The general conclusions respecting survivorship are:—

1. That the period for which a new-born child has survived birth cannot be determined by any certain sign for the first twenty-four hours.

2. That after this period an inference may be drawn from certain changes which take place progressively in the skin and umbilical cord externally, and in the viscera on inspection; that these changes allow only of an approximate opinion within the first five or six days.

3. That the contraction of the ductus arteriosus and the closure of the foramen ovale take place from natural changes at such uncertain intervals as to render it difficult to assign a date of survivorship from the state of these parts.

4. That the period which has elapsed since the child died after it was born, can be determined only by observing the degree of putrefaction in the body compared with temperature, locality, and other conditions to which it has been exposed. (See PUTREFACTION, vol. 1, p. 93.)

CHAPTER 80.

CAUSES OF DEATH IN NEW-BORN CHILDREN—PROPORTION OF CHILDREN BORN DEAD—NATURAL CAUSES OF DEATH—A PROTRACTED DELIVERY—DEBILITY—BLEEDING FROM LACERATION OF THE NAVEL-STRING—COMPRESSION OF THE NAVEL-STRING—MALFORMATION—DESTRUCTION OF MONSTROUS BIRTHS—DEATH FROM SPASM OF THE LARYNX—FROM CONGENITAL DISEASE.

Causes of death in new-born children.—The next important question in a case of infanticide, and that upon which a charge of murder essentially rests, is,—what was the cause of death?—1. It is admitted that a child may die during birth or afterwards. 2. In either of these cases it may die from *natural* or *violent causes.* The violent causes may have originated in *accident* or in *criminal design.* The last condition only involves the corpus delicti of child-murder. If death has clearly proceeded from natural causes, it is of no importance to settle whether the cause operated during or after birth—all charge of criminality is thenceforth at an end.

Proportion of children born dead.—It is well known that of children born under ordinary circumstances, a great number die from natural causes either during, or soon after birth; and in every case of child-murder, death will be presumed to have arisen from some cause of this kind, until the contrary appears from the evidence. This throws the onus of proof entirely on the prosecution. Many children die before performing the act of respiration; and thus a large number come into the world dead or still-born. The proportion of *still-born* among legitimate children, as it is derived from statistical tables extending over a series of years, and embracing not fewer than eight millions of births, varies from one in eighteen to one in twenty of all births. ('Brit. and For. Med. Rev.' No. 7, p. 235.) The late Dr. Lever found that, among three thousand births, one child in eighteen was born dead. In immature and illegitimate children, the proportionate mortality is much greater,—probably about one in eight or ten. In Göttingen the deaths were found to amount to one in seven, and in Berlin to one in ten ('Edin. Med. and Surg. Jour.' vol. 36, p. 172). Males are more frequently born dead than females, in the ratio of 140 : 100,—while the males to females born, has only a ratio of 106 : 100. (Sir J. Simpson, 'Edin. Med. and Sur. Jour.' Oct. 1844, p. 395.) The facts collected by Dr. Falk of Berlin lead to a similar conclusion. In 1855, out of 12,689 births, 11,995 were born living and 694 dead, which would represent seventeen born living to one dead. In 1859, out of 65,931 there were 62,620 living to 3,411 dead, a proportion of eighteen living to one dead. From 1856 to 1865 it was observed that out of 100 born dead in Berlin there were 56 males to 44 females. (Horn's 'Vierteljahrsschrift,' 1869, 1, 6.) Mr. Lowndes of Liverpool has recently added much to the statistics of still-births by a paper published in the 'Obstetrical Transactions' for 1873 (vol. 14, p. 283). The preponderance of still-births among males is ascribed to the large size of the head, and the injury thus likely to be inflicted on the brain during delivery. ('Annales d'Hyg.' 1865, 2, 218, 225.) Still-births are much more frequent in first than in after-pregnancies. These facts should be borne in mind, when we are

estimating the probability of the cause of death being natural. Children are much more frequently born dead among primiparous than among pluriparous women. ('Ann. d'Hyg.' 1865, 2, 443.) According to Dr. Lawrence's observations, the proportion of deaths of children born is 1 to 11 among the primiparous and 1 to 31·2 among the pluriparous. ('Edin. Med. Jour.' March 1863, p. 815.) In most cases of alleged child-murder the woman is primiparous, and the child is illegitimate. It has not hitherto been considered necessary to cause a registration of the births of children born dead, but there is reason to believe that non-registration leads to many children being disposed of as still-born, which have really come living into the world, but have soon died from neglect, exposure, or violence. It has been recently proposed to make the registration of the births of still-born children compulsory, and to render it penal to bury the bodies except under certain restrictions. The difficulty is to fix upon a term of uterine life at and beyond which all children born, whether living or dead, must be registered. As it would be difficult, if not, in many cases, impossible to obtain evidence on this point, it has been suggested that the weight of the child should be determined, and that all children whose bodies weighed not less than two pounds, should be submitted to registration before they could be legally buried. This is the average weight of a child between the sixth and seventh months, a period at which it may be born living. This rule would exclude the majority of abortions as distinguished from cases of premature labour.

Should breathing be established by the protrusion of the child's head from the outlet, or during the birth of the body, the chances of death from natural causes are considerably diminished. Nevertheless, as Dr. Hunter long ago suggested, a child may breathe and die. Thus, according to this author,—'If the child makes but one gasp and instantly dies, the lungs will swim in water as readily as if it had breathed longer and had then been strangled.' In general, it would require more than one gasp to cause the lungs to swim readily in water; but waiving this point, the real question is,—If the child breathed after birth, what could have caused its death? The number of gasps which a child may make, or which may be required for the lungs to swim in water, is of no moment: the point to be considered is, whether its death was due to causes of an accidental or criminal nature. So again observes Dr. Hunter: 'We frequently see children born, who, from circumstances in their constitution or in the nature of the labour, are but barely alive, and after breathing a minute or two, or an hour or two, die in spite of all our attention. And why may not this misfortune happen to a woman who is brought to bed by herself?' (Op. cit.) The substance of this remark is, that many children may die naturally after having been born alive; and in Dr. Hunter's time, these cases were not perhaps sufficiently attended to. In the present day, however, the case is different: a charge of child-murder is seldom raised, except in those instances where there are the most obvious marks of severe and mortal injuries on the body of a child; and unless it be intended to defend and justify the practice of infanticide, it must be admitted that the discovery of violence of this kind on the body of a new-born infant renders a full inquiry into the circumstances necessary. Among the *natural causes* of the death of a child may be enumerated the following:—

1. *A protracted delivery.*—The death of a child may proceed, in this case, from injury suffered by the head during the violent contractions of the uterus, or from an interruption to the circulation in the umbilical cord before respiration is established. A child, especially if feeble and delicate, may die from exhaustion under these circumstances. This cause of death may be suspected when a sero-sanguinolent tumour (called *cephalæmatoma*, or *caput succedaneum*) is found on the head of a child, and the head itself is deformed or elon-

gated:—internally, by the congested state of the vessels of the brain. The existence of deformity in the pelvis of the woman might corroborate this view; but in primiparous women (among whom charges of child-murder chiefly lie) with well-formed pelves, delivery is frequently protracted. It is presumed that there are no marks of violence on the body of the child, excepting those which may have reasonably arisen from accident in attempts at self-delivery.

2. *Debility.*—A child may be born either prematurely or at the full period, and not survive its birth, owing to a natural feebleness of system. This is observed among immature children; and it is a condition especially dwelt on by Dr. Hunter. Such children may continue in existence for several hours, breathing feebly, and may then die from mere weakness. These cases may be recognized by the immature condition of the body and the appearance of a general want of development.

3. *Bleeding from laceration of the navel-string.*—A child may die from loss of blood, owing to a premature separation of the placenta or an accidental rupture of the umbilical cord (funis). In the latter case it is said the loss of blood is not likely to prove fatal when breathing has been established; but instances are reported in which children have died from bleeding under these circumstances. (Henke's 'Zeitschrift,' 1839, Erg. H. p. 200; also 1840, I, 347, and vol. 2, p. 105; 'Ann. d'Hyg.' 1831, 2, 128.) Bleeding from the cord has been observed to take place at various periods after birth, and has led to the death of the child. ('Edin. Month. Jour.' July 1847, p. 70.) Death from bleeding may be commonly recognized by the blanched appearance of the body and a want of blood in the internal organs. There are several cases on record in which the cord was ruptured close to the abdomen without causing the death of the child. It was formerly a debated question whether, in the event of the umbilical cord being left untied after cutting or laceration, such a degree of hæmorrhage could in any instance occur as would prove fatal to a child. The cases above referred to render it unnecessary to discuss this question. Bleeding is more likely to prove fatal when the cord is divided by a sharp instrument than when it is lacerated; and its dangerous effects on a child are likely to be great in proportion as the division is made near to the navel. It has been improperly described as a case of infanticide by *omission*, when a self-delivered woman neglects to apply a ligature to the cord under these circumstances; because, it is said, she ought to know the necessity for this in order to prevent the child dying from hæmorrhage. Such a view assumes not only malice against the accused, but that in the midst of her distress and pain she must necessarily possess the knowledge and bodily capacity of an accoucheur—a doctrine wholly repugnant to the common feelings of humanity. This question was, however, actually raised in the case of the *Queen* v. *Dash*, August 1842. There was no doubt in this instance that the child had breathed, and that its death had been caused by bleeding from the lacerated umbilical cord. The medical witness properly admitted that the cord might have been torn through by the mere weight of the child during labour; and the jury acquitted the prisoner, on the ground that she might have been ignorant of the necessity, or not have had the power to tie it. The cord, especially when short, may become accidentally ruptured during delivery. A case of this kind occurred to Mr. Mackie. ('Med. Times,' July 24, 1847, p. 433.) The child was born alive after a strong pain; and on examination it was found that the cord was torn through at about an inch from the abdomen. On measuring the cord it was found to be only four inches and a quarter in length. In another case which occurred to Mr. Beale, in which there was no rupture but great pain caused to the woman during delivery, it was only five inches long. ('Lancet,' July 11, 1846.)

Bleeding from the vessels of the navel-string may prove fatal several days

after birth, even when a child has been properly attended to, and the navel-string has separated by the natural process. Mr. Willing has reported a case of this kind, in which, in spite of every application, the child died from loss of blood six days after the cord had separated. ('Med. Times and Gaz.' March 25, 1854, p. 287.) The impossibility of arresting the bleeding in this case appeared to depend upon a great deficiency of fibrin in the blood, and a consequent want of tendency to coagulation.

4. *Compression of the navel-string.*—When a child is born by the feet or buttocks, the cord may be so compressed under strong uterine contraction that the circulation between the mother and child will be arrested, and the latter will die. The same fatal compression may follow when, during delivery, the cord becomes twisted round the neck. A child has been known to die under these circumstances before parturition, the cord having become twisted round its neck in the uterus. ('Med. Gaz.' Oct. 1840, p. 122.) Other cases from this cause, during delivery, will be found in the same journal. (Vol. 19, pp. 232, 233.) On these occasions the child is sometimes described to have died from strangulation, but it is evident that before the establishment of respiration such a form of expression is improper. There are few or no appearances indicative of the cause of death. There may be lividity about the head and face, with a mark or furrow on the neck, and congestion of the brain internally: it is, however, proper to state that the brain of a child is always more congested than that of an adult.

There is a singular cause of death in reference to the umbilical cord which must here be noticed. It is well known to accoucheurs that knots are sometimes formed in the cord. The body of the child in its movements in utero may occasionally pass through a loop of the cord, forming a knot, which may be tightened by its further movements, or remain loose until delivery. Dr. R. Lee observes that the fœtus thereby unconsciously commits suicide by compressing the vessels and arresting all circulation between it and the placenta. The fœtus may perish before birth, or it may die from the compression naturally produced by a protracted labour. Such an accident may occur by the fœtus passing through a loop while its head is passing through the mouth of the uterus, so as to form a knot at the very moment when the body passes into the world. Whether the child had breathed effectively or not it might die by fatal compression of the cord before its birth was completed. See a paper on this subject by Dr. Read, U.S., with a variety of illustrations of umbilical knots, in the 'Amer. Jour. Med. Sci.' Oct. 1861, p. 381. The cause of death would always be apparent if the cord could be obtained for examination. The cord may be the means of producing other marks of injury on the body of the fœtus in utero, which, however, could hardly be mistaken for the effects of violence in the extra-uterine state. The occasional amputation of the limbs of the fœtus has been produced by a tightly constricted cord. Dr. Montgomery has directed attention to this subject, and in the 'Dublin Hospital Gazette,' for Jan. 1, 1846, Dr. Beatty describes the case of a fœtus in the fourth month, round the left arm of which there was a deep groove approximating to a complete separation of the limb. A coil of the cord was in this groove at the time of expulsion, and if continued it would have completed the amputation of the arm.

5. *Malformation. Monstrosity.*—It is a well-known fact that a child may be so constituted as to live in the uterus, but to die when born, from deficiency or defect of certain organs absolutely necessary to maintain extra-uterine life as it is manifested by respiration and an altered circulation of the blood. Thus the absence of some vital organ such as the brain, would at once account for a child dying either during delivery or soon after its birth. Two cases are reported, in one of which the child died from an absolute deficiency of the *gullet*,—the pharynx terminating in a cul-de-sac; in the other, the duodenum

was obliterated for more than an inch, and this had occasioned the child's death. ('Med. Gaz.' vol. 26, p. 542.) In a third, recorded by Mr. Fairbairn, a child was suffocated by retraction of the base of the tongue, owing to defect of the frænum. ('North Jour. Med.' March 1849, p. 278.) An enlargement of the thyroid gland has occasionally led to the death of a new-born child by suffocation. ('Edin. Month. Jour.' July 1847, p. 64.) The non-establishment of respiration sometimes arises from the mouth and fauces of the child being filled with mucus. Obstruction of the air passages is a frequent cause of death among still-born children.

The varieties of *malformation* are very numerous, but there can be no difficulty in determining whether they are such as to account for death. Persons are not allowed to destroy monstrous births; and the presence of all marks of violence in such cases should be regarded with suspicion. It is the more necessary to make this statement, as there is an idea among the vulgar that it is not illegal to destroy a monstrous birth. Mr. Pooley of Cirencester, communicated to me a case which occurred some years since in his practice. A lady was delivered of a most hideous dicephalous (two-headed) monster. In his absence, and at the earnest solicitation of the friends, the nurse destroyed it. The question was—Was this woman guilty of child-murder? The only case in reference to this point which is recorded by medico-legal writers, is that of two women who were tried at the York Assizes in 1812, for drowning a child which was born with some malformation of the head, in consequence of which it was likely that it could not survive many hours. It did not appear that there had been any concealment on the part of the prisoners, who were not aware of the illegality of the act. (Paris and Fonblanque, 'Med. Jur.' vol. 1, p. 228.) The absence of malicious intention would probably lead to an acquittal on a charge of murder, but such an act would doubtless amount to manslaughter; the degree of monstrosity or the viability of the offspring cannot be received as extenuating circumstances. As to the first, if a liberty of judging what was monstrous and what not, were conceded to any ignorant nurse, children simply deformed might be put to death on this pretence: as to the second, it is held in law that whoever accelerates death causes it,—hence the fact that the offspring is not likely to live more than a few hours does not justify the act of one who prematurely destroys it.

6. *Spasm of the Larynx.*—Atelectasis, as it has been elsewhere explained, implies simply an unexpanded state of the lungs. In some cases it is complete, in others partial. (See illustration, fig. 154, p. 338.) It can scarcely be regarded as a diseased condition, as the body of the child may be otherwise healthy: the lungs themselves are in a normal state, and they can be easily expanded by the artificial introduction of air, or by other remedial measures when assistance is at hand. This imperfect expansion of the lungs is generally due to debility in the child, and is especially a cause of death in weakly or immature children. But strong and healthy children may die from non-inflation of the lungs. They are born with uterine life, and on coming into the world make attempts at inspiration, but as Dr. Hicks has pointed out, owing to spasm of the larynx and retraction of the tongue, the air is unable to enter—the child dies, and on inspection no air being found in the lungs, the child is wrongly pronounced to have been born dead. ('Guy's Hosp. Rep.' 1866, p. 476.) A careful inspection of the fauces may show the presence of mucus or meconium or a condition of the epiglottis, which may account for non-respiration. Dr. Hicks has on more than one occasion seen the new-born child make these inspiratory efforts, and by lifting the epiglottis has given free passage to the air, and the child has been saved. (See p. 342, *ante.*)

7. *Congenital diseases.*—It has been elsewhere stated, that a child may be born labouring under such a degree of congenital disease as to render it in-

capable of living. The discovery of any of the fœtal organs merely in a morbid condition amounts to nothing unless the disease has advanced to a degree which would be sufficient to account for the child's death. There are, doubtless, many obscure affections, particularly of the brain, which are liable to destroy the life of a child without leaving any well-marked changes in the dead body. According to Dr. Burgess, apoplexy and asphyxia are the usual causes of death among new-born children, the latter the more common. ('Med. Gaz.' vol. 26, p. 492; Henke's 'Zeitschrift der S. A.' 1843, p. 67.) Probably diseases of the lungs are of the greatest importance in a medico-legal point of view; because, by indirectly affecting the organs of respiration, they render it impossible for a child to live, or to survive its birth for a long period. The diseases in the fœtal state are principally congestion, hepatization, tubercle, scirrhus, and œdema of the lungs—the existence of any of which it is not difficult to discover. They render the structure of the lungs heavier than water, and thus prevent them from acquiring that buoyancy which in a healthy state they are known to possess. It is not common to find the lungs diseased throughout—a portion may be sufficiently healthy to allow of a partial performance of respiration.

Conclusions.—The following conclusions may be drawn from the preceding remarks:—

1. That a large number of illegitimate children, especially when immature, are born dead from *natural* causes.

2. That a child may die from exhaustion as the result of a protracted labour.

3. That if a child is prematurely born, or if it is small and weak even at the natural period, it may die from mere debility or want of power in the constitution either to commence or to continue the act of respiration.

4. A child may die from loss of blood, owing to accidental rupture of the cord during delivery: it may even die from this cause after it has breathed.

5. That fatal bleeding is more likely to occur when the cord has been cut close to the abdomen than when it has been lacerated or cut at a distance from the navel.

6. That a division of the cord, whether by rupture or incision, without ligature, is by no means necessarily fatal to a healthy mature child.

7. That a child may die from accidental compression of the cord during delivery—the circulation between the mother and child being thereby arrested before or after breathing.

8. That death may speedily follow birth from some malformation or defect or deficiency of important organs.

9. That a child may die from congenital disease affecting the organs of respiration or the air-passages.

CHAPTER 81.

VIOLENT CAUSES OF DEATH—FORMS OF VIOLENT DEATH UNATTENDED WITH MARKS OF EXTERNAL VIOLENCE—SUFFOCATION—DROWNING—IN THE SOIL OF PRIVIES—POWER OF LOCOMOTION AND EXERTION IN WOMEN AFTER DELIVERY—DEATH OF THE CHILD FROM COLD AND EXPOSURE—STARVATION—DEATH FROM IMMATURITY IN CASES OF ABORTION.

Violent causes of death.—In this chapter we have to consider those modes of death which are totally independent of the existence of congenital disease or other natural causes. It is proper for a medical jurist to remember that

there are certain forms of child-murder which are not necessarily attended with appearances indicative of violence; these are suffocation, drowning, exposure to cold, and starvation. (See a paper on the violent causes of death in new-born children, by Casper, in his 'Vierteljahrsschrift' for 1863, vol. 2, p. 1.)

1. SUFFOCATION.

This is a common cause of death in new-born children. A wet cloth may be placed over the child's mouth, or thrust into this cavity, either during birth or afterwards, and before or after the performance of respiration. To the latter case only, could the term suffocation be strictly applied. A child may be thus destroyed by being allowed to remain closely compressed under the bed-clothes after delivery, or by its head being thrust into straw, feathers, dust, ashes, and similar substances. The appearances in the body are seldom sufficient to excite a suspicion of the cause of death, unless undue violence has been employed. There is commonly merely lividity about the head and face, with slight congestion of the lungs. A careful examination of the mouth and throat should be made, as foreign substances are sometimes found in this situation, affording circumstantial evidence of the mode in which the suffocation has taken place. Thus wood, straw, feathers, dust, tow, or a hard plug of linen may be, and in some cases have been, found blocking up the mouth and fauces, drawn into these parts by aspiration when the mouth of a child has been covered with such substances. (See SMOTHERING, *ante*, p. 92.) If a child has lived sufficiently long to be fed, it may be accidentally suffocated by the entrance of portions of food into the windpipe and air-passages. The following case in reference to a child which survived its birth thirty days, which occurred to Mr. Ross of Guildford, will throw a light upon this accidental cause of death:—An infant thirty days old, was found dead in bed; the mother, a married woman, the wife of a labourer, stated that the child was healthy, and was put to bed after having sucked well at 7 P.M. the previous evening; also once in the night about 2 A.M. On awaking at 4.30 A.M. she found the child dead. It was lying on her right side—the farthest side from the father, and on its own left side looking towards its mother. When seen by Mr. Ross it was on its back; the hands were clenched, the lips blue and pouting, and the tongue thrust out a little way between them. There were no marks of violence or of flattening of the features. The lungs and right cavities of the heart were distended with blood. The stomach contained a quantity of curdled milk. On opening the larynx a small quantity of the curd of milk was found resting on the vocal chords of the larynx and lining the upper two or three rings of the windpipe, thus completely blocking up the tube, which in calibre was not larger than a goosequill. It appeared that on the previous day the child had frequently thrown up its milk; it had probably vomited it in the night while its face was turned towards the pillow, and had by aspiration drawn a portion of the curd of milk into the air-passages, and thus caused death by suffocation. An infant of this age would not have the power to relieve itself in such a position. This was the cause of death assigned at the inquest, and a similar cause would probably be more frequently found if the larynx were always examined in infants alleged to have been overlaid during sleep.

A new-born child may be suffocated by having its head held over noxious vapours, such as the exhalations of a privy or of burning sulphur; and it is here necessary to remind a medical jurist that other highly poisonous vapours, *e.g.* chloroform, may be used by a criminal without leaving any traces upon the body—except, possibly, that which may depend upon their peculiar odour.

There are few of these cases of suffocation in which a medical opinion of the cause of death could be given, unless some circumstantial evidence were produced, and the witness were allowed to say whether the alleged facts were or were not sufficient to account for death. ('Annales d'Hyg.' 1832, vol. 1, p. 621.)

On the other hand, if it be even clearly proved that death has been caused by suffocation, it must be remembered that a child may be accidentally suffocated, and the crime of murder falsely imputed. Dr. J. M. Duncan, quoting the observations of Dr. Buhl, states that obstruction of the air-passages by mucus and other matters is a frequent cause of death in new-born children. Among twenty-seven children dying in labour or shortly after birth, eleven were destroyed by obstruction of the air-passages with foreign matters, or presented this condition. Eight were born dead, and of those which were alive at birth, none survived the first day. In ten of the cases the obstruction was produced by a greenish or greenish-brown slimy mass (meconium and mucus) filling the larynx and windpipe. In two of the cases, in which the child died during delivery, air was found in the lungs, and in only one of these the air had been derived from the act of respiration during birth. ('Edin. Monthly Med. Jour.' April 1863, p. 924; also 'Med. Times and Gazette,' August 3, 1861, p. 117.) In Dr. Hicks's case (p. 342, *ante*) the base of the tongue in a new-born child was so drawn down by spasmodic action as to close the glottis by pressing backwards the epiglottis. The child was saved by raising the epiglottis, when air rushed in, and breathing was established; but many children must be born under similar conditions when no assistance is at hand. Cases of this kind, however, rarely give rise to charges of child-murder, as no air is found in the lungs and there are no marks of violence on the body. A child might be killed during delivery by pressure applied to the chest; this might be such as not to produce any indication of violence. If the child had not breathed, there would be nothing to show the mode of death; but if air had entered the lungs, then the usual appearances would be found in these organs (p. 85, *ante*). In dealing with a case of this kind, it should be remembered that a child with its head born, but detained in the outlet by the size of its shoulders, might die from pressure exerted on the chest by the vagina. It might have breathed, but be born dead with the marks of suffocation about it. There is another accidental cause of the death of a new-born child during delivery. The membranes or caul may be carried forward over the head and face, and the act of breathing thus mechanically prevented. If no assistance is at hand, the child, although born living, will die soon after birth in consequence of the prevention of respiration. If, when the dead body is found, the membranes are no longer there, the cause of the prevention of respiration would not be apparent. The child, although born living, would probably be pronounced to have been born dead. (See case by Mr. Hall, 'Med. Times and Gaz.' January 1863, p. 126.) The delivery of a child with a mask or caul around its head is not an unfrequent occurrence. In June 1862 Mr. Blenkinsop, of Warwick, communicated to me a case in which a child so born was allowed to perish by those who had access to it. The caul was simply not removed, so that breathing could not be set up. The child was mature and healthy. The lungs contained no air. There was congestion of the brain and lividity of the body, but no mark of violence. There was some evidence that the child had been born living, and that the cause of death was the prevention of respiration by omission to do that which was necessary. As the medical evidence showed that the child had not breathed, the Coroner held that it had never had any (legal) existence, and that there was no ground for any further investigation. Dr. Hunter, who was well aware of the risk to which a woman might be thus exposed, observes

in relation to this state of things:—'When a woman is delivered by herself, a strong child may be born perfectly alive, and die in a very few minutes for want of breath, either by being on its face in a pool formed by the natural discharges, or upon wet clothes; or by the wet things over it collapsing and excluding air, or drawn close to its mouth and nose by the suction of breathing. An unhappy woman delivered by herself, distracted in her mind and exhausted in her body, will not have strength or recollection enough to fly instantly to the relief of her child. (Op. cit. p. 35.) It may be added that a primiparous female may faint or become wholly unconscious of her situation; or, if conscious, she may be ignorant of the necessity of removing the child, and thus it may be suffocated without her having been intentionally accessory to its death. In such cases, however, there should be no marks of violence on the body, or, if present, they should be of such a nature and in such a situation as to be readily explicable on the supposition of an accidental origin. (See case by Dr. Dohow, Horn's 'Vierteljahrsschrift, 1864, 2, 123.)

An infant is easily destroyed by suffocation. If the mouth and nostrils are kept covered for a few minutes, by the face being closely wrapped in clothes, asphyxia may come on without this being indicated by convulsions or any other marked symptoms (see p. 92, *ante*). A suspicion of murder may arise in such cases; but the absence of marks of violence, with an explanation of the circumstances, will rarely allow the case to be carried beyond an inquest. Sometimes the body is found maltreated, with severe fractures or contusions on the skull, and marks of strangulation on the neck; concealed in a feather bed or privy, or cut up and burnt. This kind of violence may properly excite a suspicion of murder and lead to the belief that the allegation of death from accidental suffocation is a mere pretence. This, however, is purely a question for a jury, and not for a medical witness. Unless the case is of a glaring nature, the violence is considered to have been employed for the purpose rather of aiding delivery or concealing the birth of a child than of destroying it. In the present day these cases of death from accidental suffocation, when properly investigated, can never involve an innocent woman in a charge of murder, although the facts may show in many instances that the death of the child was really due to great imprudence, gross neglect, or culpable indifference on her part. Thus a woman knowing or having reason to believe that her delivery is impending, is secretly delivered at night. The child is born under the bedclothes; no effort is made to remove it, and it necessarily dies from suffocation. In some cases of this kind a woman, as Dr. Hunter suggests, may be unable to make the necessary exertion to uncover the head of the child so as to allow it to breathe. In others, however, there is no desire to save life and the child is found dead. A case of this kind occurred to Dr. Dohrn, of Meldorf, in which he was able to show that the child had breathed and had probably come into the world alive, but had died from wilful neglect. The woman was conscious of her delivery, but asserted that the child showed no sign of life after birth. (Horn's 'Vierteljahrs.' 1867, 2, 84). Dr. Dohrn's report furnishes a model for the investigation of cases of this kind. Such a case may not be considered as murder, but it involves something more than a mere 'concealment of birth.' If there is a real intention to suppress infanticide, a case like this should be treated as manslaughter. Some of our judges, including Mr. Justice Brett and the late Mr. Justice Willes, have already taken the course of directing the jury to find a verdict of manslaughter when there was proof from the general evidence of culpable neglect or reckless indifference to the life of her child on the part of the woman. On conviction the women have been sentenced to penal servitude for ten years.

The following case (*Reg.* v. *Mortiboys*), tried in 1841, will show that in

this country, even when the evidence is very strong against a person, the circumstances will be most favourably interpreted towards the accused. In this instance it was proved that the body of the child was discovered in a box containing wool; it was lying on its abdomen, with its face raised and its mouth open. A red worsted comforter had been passed twice round the neck, and was tied a second time in a single knot over the chin. In the mouth, which was open, was found a small quantity of fine flocks of wool. The medical evidence showed that the child had been born alive, the left lung being fully inflated. The brain was congested. There was no mark produced by the ligature on the neck, either externally or internally. Death was referred to obstructed respiration (suffocation), caused partly by the ligature and partly by the wool in the mouth; but the latter was considered to be the more active cause. In the defence it was urged that the ligature could not have produced strangulation, because the comforter was tied upon the chin—that the medical evidence showed the wool in the mouth to have been the immediate cause of death; this was probably taken into the mouth by the child itself in the instinctive act of breathing, and not put there by the prisoner for the purpose of suffocation. The child had probably been placed carelessly on a quantity of wool, into which it had sunk by its own weight, and this had caused its death. It is reported that the judge joined in this view, and in charging the jury said, that had the prisoner intended to choke the child with the wool, she would have inserted enough to fill its mouth. The prisoner was acquitted. In this case, admitting that the evidence did not bear out the charge of murder, still it is clear that death was caused by the child being placed on its face, with a ligature round the neck, in a close box filled with wool. A new-born infant could no more breathe in such a position than if the wool had been directly thrust into its mouth. Admitting the facts to have been as represented, there appears to have been in this case something more than an accident; for the prisoner must have known that her infant was not likely to live long under such circumstances, and had the child been a week or a month old, she would probably have been convicted of manslaughter or murder.

A case of alleged child-murder by suffocation has been reported by the late Dr. Easton of Glasgow. (Cormack's 'Journal,' Feb. 1845.) The child in this case was suffocated by a quantity of mud having been forced into its mouth and throat; its presence in the gullet was incompatible with its having entered by gravitation. In the case of *Macintyre* (Glasgow Aut. Circ., 1829), several small pieces of straw were found in the stomach of a child, of the same kind as those which were in the bed where the birth took place. In another case, reported by Dr. Littlejohn, it was found that a mass of dough, or bread-pulp, had been forcibly impacted in the throat and larynx of the child; it was found to be accurately moulded to the parts. ('Edin. Med. Jour.' Dec. 1855, p. 521.) In one instance a plug of flax was discovered in the mouth. ('Ann. d'Hyg.' 1863, 2, 395.)

Any foreign substance found in the air-passages should be most carefully examined. Dr. Dohrn gives a caution in this respect from a case which fell under his notice. The body of a new-born child was found in a marshy soil, and from an examination it was stated that it had breathed, had been buried where the body was found, and had died from suffocation. This opinion was chiefly based on the discovery of a dark-coloured substance in the trachea and bronchial passages, which was pronounced to be earth from the marsh in which the body was buried. The woman who gave birth to the child said she had been suddenly delivered over a tub, used for the purpose of a privy, that the child fell into the excrementitious fluid, and that she afterwards removed the body and buried it in the place where it was discovered. Her story was corroborated by a subsequent examination made by Dr. Dohrn; for he found

that the dark substance present in the air-passages and in the œsophagus was not part of the earthy soil in which the body had been buried, but dried fæcal matter. This discovery of the real nature of the substance exonerated the woman from the charge of murder. (Horn's 'Vierteljahrsschrift,' 1867, 2, 98.)

Post-mortem appearances.—These are fully described, in reference to adults, at page 85 *ante*; and they are similar in new-born children, provided respiration has been fully performed. M. Tardieu attaches great importance to the discovery of subpleural or punctiform ecchymoses on the lungs of children: he has also noticed small effusions of blood on the surface and in the substance of the thymus gland. ('Ann. d'Hyg.' 1855, 2, 379.) If the lungs float on water, as the result of breathing, then the appearances described will be met with: but it is worthy of remark that in three instances, M. Tardieu met with similar appearances in children whose lungs had not received air, and sank when placed on water. They were children prematurely born, and under conditions which prevented full vital development. One born in the Hospital of Riboisière uttered several cries, but, in spite of this, the lungs contained no air. The subpleural ecchymoses met with in children under these circumstances, are ascribed by M. Tardieu to the efforts made to breathe after birth (loc. cit.).

Much has been written touching the post-mortem appearances in death from suffocation in new-born children. A reliance on the presence of these punctiform ecchymoses may, it appears, mislead a medical jurist, as in the following case published by Drs. Douillard and Gallard. A child was born at the seventh month, and died in about six days from congenital weakness. The lungs, which were removed for the sake of experiments, presented on their surface eighteen or twenty of those small subpleural ecchymoses, which have been supposed to be characteristic of death from suffocation. ('Ann. d'Hyg.' 1872, 1, 201). These writers justly remark that those who find such an appearance in the lungs of new-born children must therefore be cautious in placing reliance upon it as a proof of death from suffocation. Some observations and experiments on this post-mortem appearance have also been made by Dr. Ssabinski. (Horn's 'Vierteljahrs.' 1867, 2, 146.) This physician states that in many experiments on the suffocation of animals the ecchymoses were found once only in ten cases. He thinks that an anæmic or bloodless condition of the spleen is more frequently found (op. cit. p. 159); but this state of the spleen has not been met with by other observers. Congestion of the lungs, although a common appearance, is not always seen in death from suffocation (page 97, *ante*). Partial emphysema of these organs has been occasionally observed.

At page 91 *ante* some remarks have been made on the suffocation of new-born children, by thrusting foreign substances into the mouth. In May 1872 Dr. Moore, of Lancaster, consulted me on the following case. A servant girl had given birth to a healthy child. This child was found alive about a quarter of an hour afterwards in a privy, and it lived a few minutes after the discovery. Its jaw was broken, its cheek torn, and the mouth contained ashes, some of which were found in the back part of the throat. The body was blanched, and there had evidently been a great loss of blood from the wounds and the torn umbilical cord. There was no engorgement of the lungs, nor any subpleural ecchymoses. The lining membrane of the trachea was stained with ashes, and a small cinder was found in the left branches.

In this case there was no question respecting live-birth, as the child was living when found, but what was the cause of death, and was this accidental or the result of violence wilfully applied after birth? In the opinion of Dr. Moore the mouth of the child had been forcibly torn open and filled with ashes in order to suffocate it. These ashes must have been drawn by aspiration into the air-passages, and death was caused partly by suffocation and

partly by hæmorrhage from the wounds, the child's body being bloodless. The condition of the lungs was not inconsistent with death from suffocation. For some remarks on death from suffocation in child-murder, with reports of cases, see a paper by M. Séverin Caussé, 'Ann. d'Hyg.' 1869, 2, 122, 443.

2. DROWNING.

The fact of drowning cannot be verified by any appearances in the body of a child which has *not* breathed. Thus, if a woman caused herself to be delivered in a bath, and the child was forcibly retained under water (a case which is said to have occurred), it would of course die; but no evidence of the mode of death would be found in the body. For cases in which a child was thus destroyed, probably, however, through accidental circumstances, see Cormack's 'Edin. Jour.' Oct. 1845, p. 796; also 'Dublin Med. Press,' March 4, 1864, p. 135. After respiration, the signs of drowning will be the same as those met with in the adult. (See p. 10 *ante*.) The main question for a witness to decide will be, whether the child was put into the water, or the vessel containing water, living or dead. Infanticide by drowning is by no means common; the child is generally suffocated, strangled, or destroyed in other ways, and its body is then thrown into water in order to conceal the real manner of its death. The discovery of the dead body of an infant in water, must not allow a witness to be thrown off his guard: although a verdict of 'found drowned' is so commonly returned in these cases. The body should be carefully inspected, in order to determine what was really the cause of death. All marks of violence on the bodies of children that have died by drowning, should be such as to have resulted from accidental causes. The throat and air-passages should be particularly examined. In a case which occurred to Dr. Schraube, it was clear, from the state of the lungs, that the child had breathed, but no water was found in the lungs or stomach. There was a furrow or depression around the neck, such as would be produced by the pressure of a ligature. The conclusion arrived at was that this child had been strangled, and its body thrown into water after death. (Horn's 'Vierteljahrs.' 1867, 1, 302.) The reporter gave his opinion from the facts that the child had lived, chiefly owing to the state of the lungs. No subtle distinctions were drawn touching the question whether the child had breathed after entire separation from the mother, or the precise time at which the cord had been applied to the neck, *i.e.* before or after its complete birth.

It is not necessary that the *whole* of the body of a child should be submerged, in order that it may be destroyed by drowning: the mere immersion of the head in water, or the covering of the mouth with liquid, will suffice to produce the usual effects of asphyxia. The air-passages should therefore be examined for foreign substances which may be deposited in them. A case occurred in London in 1842, in which a woman attempted to destroy her child by immersing its head only in a bucket of water. The child was discovered and resuscitated. This mode of destroying children by drowning may easily deceive a medical man. He would commonly look for evidence of the submersion of the whole body, and if no pond or well were near, he might from the absence of well-marked post-mortem appearances, assign death to some natural cause. Dr. Lancaster mentions the case of a woman who drowned her child, but who was acquitted at her trial on the ground that no water had been seen in the room; yet there were witnesses in court who had sworn before the coroner's jury that water was in a pail in the room, and was taken away after the death of the child. ('Second Annual Report,' 1865, p. 23.) When the dead body of an infant is found in water, it does not necessarily follow that it has been destroyed by drowning; a special examination of the body will be required to

determine this point. (See DROWNING.) Dr. Walther has published a case of interest in this respect, in Casper's 'Vierteljahrsschrift' (1863, 2, 259).

New-born children may be drowned or suffocated by being thrown into liquid mud or into the soil of a privy. Sometimes the child is destroyed by other means, and its dead body is thus disposed of for the purpose of concealment. Should there be a large quantity of liquid present, the phenomena are those of drowning. The liquid portion of the soil abounding in sulphide of ammonium may be found, if the child was thrown in living, in the air-passages, gullet, or stomach. The mere discovery of soil in the mouth would not suffice to show that the child was living when immersed. The presence of foreign substances, such as dirt, straw, or ashes, in the air-passages, gullet, and stomach, has usually been taken as a medical proof of the child having been living when immersed in the dirt, &c., and that the substances had been drawn into the passages by inspiration or the act of swallowing. This subject has already been considered in reference to the proofs of a child having been born alive, *ante*, p. 379. It presents a wide field for conflicting medical opinions. In *Reg.* v. *Allridge* (Derby Winter Assizes, 1859), the dead body of a child was found buried in a garden. On examination there was earth in the mouth and throat, as well as in both nostrils at the back part; and particles of earth were found in the windpipe and air-tubes as well as in the stomach. The medical witness referred the death to suffocation, and considered that the earth must have been inhaled. Another medical witness, called for the defence, affirmed that the earth might have been carried into the passages of the body accidentally by the percolation of water (in eight days), and that it had not found its way there by inhalation. The jury upon this acquitted the prisoner. Although the mouth and throat may thus accidentally receive foreign matters, it is most improbable that earth should be carried into the air-tubes or stomach by rain-water. The child was probably thrust into the earth when it retained some power of breathing and swallowing, and the earth found in the mouth and throat might be assigned to the violence with which it was forced into the soil. The nature of the soil, and the circumstances under which the dead body is found, must materially guide a medical opinion in cases of this nature. See a paper by Dr. Märklin (Casper's 'Vierteljahrsschrift,' 1859, 2, 32), and by Dr. Simeons in the same journal (1860, 2, 287; see also 'Ann. d'Hyg.' 1852, 1, 464).

On these occasions, the defence may be:—1. That the child was born dead, and that the body was thrown in for concealment; but the medical evidence may show that the child had breathed, and had probably been born living. 2. It may be alleged that the child breathed for a few moments after birth, but then died, and that the female thus attempted to conceal the body. A medical witness may be here asked, whether a woman could have had power to convey the body to the place—a point which must, as a general rule, be conceded. 3. It is most commonly urged, that the woman being compelled to go to the privy, was there *delivered unconsciously* or unexpectedly; that her waters had broken, and that she had no idea of anything more having happened; or that the child had dropped from her, and was either suffocated or prevented from breathing. ('Med. Times and Gazette,' Dec. 21, 1861, p. 646.) All these circumstances may readily occur, but, on the other hand, the explanation may be inconsistent with some of the medical facts. (See a case by M. Adelon, 'Ann. d'Hyg.' 1855, 2, 453; also Casper's 'Klinische Novellen,' 1863, p. 585.) Thus the head or the limbs of a child may be found to have been separated or divided by some cutting instrument, or a cord or other ligature may be found tightly bound around its neck, or there may be a tightly-fitting plug in the throat. Then, again, the body may be entire, but the umbilical cord may be *cleanly cut*. This would tend to set

aside the explanation of the child having accidentally dropped from the female: because in such an accident the cord should be found *ruptured*. The practitioner should make a careful examination of the divided ends of the cord by the aid of a lens, or a rupture may be mistaken for a section with a sharp instrument. Mr. Higginson, of Liverpool, has published a case of some interest in this point of view. The child fell from the mother, and the cord broke spontaneously. 'The torn ends were nearly as sharp-edged and flat as if cut.' ('Med. Gaz.' vol. 48, p. 985.) This case goes to prove that a careless or hasty examination of the ends of the cord may lead to a serious mistake. Sometimes the mark of a previous cut may be found on the cord near one of its divided ends—the first cut with scissors not having effectually divided it. In a case tried at Lewes Lent Assizes, 1852, Mr. Gardner proved, in reference to the body of a child which had been found in a privy, that the cord had been ineffectually cut in one spot previous to its complete division in another part. The cord had been also pulled out after this cut, so as to elongate the vessels; hence they projected from one part of the sheath at one cut portion, while they were retracted in the other. This accurate observation showed not only that the cord had not been ruptured by the child accidentally falling from the mother, but it served to establish the identity of the placenta, which was found concealed at a distance from the body. When the cord is lacerated, this will be, *cæteris paribus*, in favour of the woman's statement as to the mode in which her delivery occurred. (For a case involving this question, see 'Med. Gaz.' vol. 10, p. 374.) Another fact in her favour will be the absence of any marks of intentional violence about the body. It is remarkable that infants exposed to death under these circumstances sometimes show a great tenacity of life. One case of this kind which occurred to Dr. Moore has been elsewhere noticed (p. 395). The following, which is reported by Dr. Tenneson, is of some interest in this respect ('Ann. d'Hyg.' 1872, 1, 438):—In this case a new-born child recovered after it had remained four hours in a drain-pipe connected with a cesspool which received the soil of privies. A girl was charged with attempted child-murder. It was proved that she had been recently delivered. She stated that she had been to the privy for a natural purpose, and was there suddenly delivered. A full-grown child was found in the large drain-pipe, between the privy and the cesspool. It was alive, and was restored by the warm bath and other means. On examining it, there was no mark of violence; the cord had been ruptured as by a fall, while there was nothing to show an attempt at murder. The appearances presented by the body of the child were consistent with the woman's statements. The preservation of its life was remarkable. The first part of the drain-pipe was wide enough to admit the body, which lodged at the lower part, near a bend. It was thus saved from falling into the cesspool. The drain-pipe contained air and no sewer gases—hence the child could breathe, and before removal it was heard to cry. M. Devergie suggested that its life had been saved owing to the noxious gases being kept down by the drying of the surface of the soil.

In a case which occurred to Dr. Wharrie, in which the child fell from a woman while sitting over a large jug containing water, and from the state of the lungs it was evident there had been no respiration, the cord was found tied. As the child was removed from the vessel dead, the ligature must have been applied after death, and the body replaced in the jug. Drowning may be the result of accident from sudden delivery. A woman in an advanced state of pregnancy, while sitting on a chamber-vessel, was suddenly delivered. The child fell into the fluids in the vessel, and before assistance could be rendered, it was dead. In December 1864, Mr. Parker, of Liverpool, communicated to me the following case:—A woman who had already had two illegi-

timate children, delivered herself of a third, and alleged that it was still-born. Mr. Parker examined the body of the child, which was of average size. The head and face were much congested, and there was a slight oozing of bloody fluid from the nostrils. The eyelids were discoloured; the lips were separated, swollen, and livid; the chest was arched. The navel-string had been cut but not tied, and there was a slight oozing of blood from it. The lungs had all the usual fœtal characters; they sank in water when cut into small pieces. There was dark fluid blood in the heart and large vessels. It came out in evidence, at the inquest, that the woman was delivered while sitting on the chamber-utensil, when the whole contents of the uterus at once passed from her—the child and afterbirth with the waters. A neighbour came in and placed the woman in bed, but omitted to look to the child, which was soon afterwards found dead. Mr. Parker stated in his evidence that the child had not breathed. His conclusion was that it had probably been born alive, but had died from prevention of breathing at its birth, owing to the want of proper attention. There is no doubt that many children are thus born alive, but they do not continue to live after birth, owing to the accidental or criminal prevention of respiration. Such cases are always open to the suggestion that they arose from accident, and it is right that a woman charged with child-murder should have the full benefit of them. Two instructive cases are reported by Dr. Carson, of Coleraine, which show that, alone and unassisted, the mother of an illegitimate child may be placed under circumstances of the greatest suspicion, although innocent of any attempt to destroy the life of her child. ('Med. Times and Gazette,' Jan. 26, 1861, p. 99; see a case in Casper's 'Vierteljahrsschrift,' 1859, 2, 36; also in Horn's 'Vierteljahrsschrift,' Jan. 1865, vol. 1, p. 40; and 'Ann. d'Hyg.' 1868, 2, 173.)

Circumstantial evidence.—Whether, in any instance, the *drowning* of a child was accidental or criminal, must be a question for a jury to determine from all the facts laid before them. The situation in which the body of an infant is found may plainly contradict the supposition of accident. On the other hand, a child may be accidentally drowned by its mouth falling into a pool of the discharges during delivery, although this would be rather a case of suffocation (*ante*, p. 393). The throat, windpipe, and stomach of the child should always be examined on these occasions, as mud, sticks, straw, ashes, weeds, or other substances may be found, indicating, according to circumstances, that the child had been put into the water living, and that it had been drowned in a particular pond or vessel.

3. COLD AND EXPOSURE.

A new-born child may be easily destroyed by simply exposing it uncovered, or but slightly covered, to a cold atmosphere. In a case of this kind there may be no marks of violence on the body, or these may be slight and evidently of accidental origin. In death from cold the only appearance occasionally met with has been congestion of the brain, with or without serous effusion in the ventricles. (See 'COLD,' *ante*, p. 137). The evidence in these cases must be purely circumstantial. The medical witness may have to consider how far the situation in which the body was found—the kind of exposure, and the temperature of the air, would suffice to account for death from the alleged cause. There is no doubt that a new-born child is easily affected by a low temperature, and that warm clothing is required for the preservation of its life. An inspection of the body should never be omitted on these occasions, because it might turn out that there was some latent cause of natural death which would at once do away with the charge of murder. Admitting that the child died from cold, it becomes necessary to enquire whether the prisoner exposed it

with a malicious intention that it should thus perish. Unless wilful malice be made out, the accused cannot be convicted of murder. In the absence of proof of any wilful intention to destroy the child, there may have been, however, such a degree of culpable negligence or reckless indifference on the part of the woman as to justify a conviction for manslaughter. In general, women recently delivered do not expose their children for the purpose of destroying them, but for the purpose of abandoning them: hence it is rare to hear of convictions for child-murder where cold was the cause of death, although some medical jurists have called this infanticide by *omission*. In the case of *Reg.* v. *Walters* (Oxford Autumn Assizes, 1841), it was proved that the prisoner, while travelling in a waggon, had suddenly left the vehicle, and that she was delivered of a child, which was afterwards found dead and exposed on the road. There was no doubt that the child had been born alive; for it was heard to cry after it was abandoned by its mother, who appeared to have carried it some distance after it was born. The child had died from exposure to cold. The woman was convicted of manslaughter, and sentenced to ten years' transportation. (For other medico-legal cases of death from cold, see Henke's 'Zeitschrift,' 1836; also 1840, 1, 168, Erg. H.) In the case of *Reg.* v. *Waters* (Exchequer Chamber, Jan. 1849), the judges held on appeal that the count which charged the prisoner with causing the death of her child by throwing it on a dust-heap, and leaving it exposed, was good, and the conviction was affirmed. Dr. Turner reported to the Medico-legal Society of Paris the following case:—A girl, who stated that she was not aware of her pregnancy, was suddenly delivered while sitting on a night-stool. According to her account, she fainted, and on coming to herself she found the child on the floor dead. The child had fully breathed, the umbilical cord had been cut, and there was no mark of violence on the body. The cause of death was assigned to exposure, and the absence of those attentions required by a new-born child, as well as to congenital debility. ('Ann. d'Hyg.' 1868, 2, 173.) The woman was found guilty of causing the death of her child by imprudence, inattention, and negligence. She was sentenced to two years' imprisonment, and the costs of the trial. See also a similar case by Dr. Böhm. (Horn's 'Vierteljahrs.' 1865, 2, 98). A case of infanticide, as a result of exposure to cold, with an account of the appearances in the body, is reported by Dr. Otto. (Horn's 'Vierteljahrs.' 1866, 2, 148.)

4. STARVATION.

A new-born child kept long without food will die, and no evidence of the fact may be derivable from an examination of the body. There may be no marks of violence externally, nor any pathological changes internally, to account for death. This is a rare form of murder, except as it may be accidentally combined with exposure to cold. In order to convict the mother, it is necessary to show that the child was wilfully kept without food, with the criminal design of destroying it. Mere neglect or imprudence will not make the case infanticide, although it may be such as to justify a charge of manslaughter. The only appearance likely to be found on examination of the body, would be complete emptiness of the alimentary canal. Without corroborative circumstantial evidence, this would not suffice to establish the cause of death: a medical witness could only form a probable conjecture on the point. In a suspected case of this kind, the contents of the stomach should be tested for farinaceous and other kinds of foods. (See STARVATION, p. 141, *ante*.)

5. IMMATURITY.

From the case of *Reg.* v. *West* (Nottingham Lent Assizes, 1848), it would appear that if by the perpetration of abortion, or the criminal inducement of

premature labour, a child be born living at so early a period of uterine life that it dies merely from *immaturity*, the person causing the abortion, or leading to the premature birth, may be tried on a charge of murder. A midwife was alleged to have perpetrated abortion on a female who was between the fifth and sixth months of pregnancy. The child was born living, but died five hours after its birth. There was no violence offered to it; and its death appeared to be due entirely to its immaturity. The prisoner was acquitted, apparently on the ground that abortion might have arisen from other causes. In a case of this kind it must be clearly proved that the fœtus or child lived after its birth.

CHAPTER 82.

VIOLENT CAUSES OF DEATH IN NEW-BORN CHILDREN—MARKS OF VIOLENCE ON THE BODY—WOUNDS—CUTS AND LACERATIONS—FRACTURES OF THE SKULL ACCIDENTAL AND CRIMINAL—SUDDEN DELIVERY—PAINS OF LABOUR MISTAKEN—POWER OF EXERTION AND LOCOMOTION—DELIVERY IN THE ERECT POSTURE—VIOLENCE IN SELF-DELIVERY.

Among those causes of violent death which leave upon the body of the child certain marks or appearances, indicative of the nature of the violence, may be mentioned wounds, strangulation, and poisoning.

6. WOUNDS.

Probably this is one of the most frequent causes of violent death in cases of infanticide. Wounds may, however, be found on the body of a child which has died from some other cause. The principal questions which a medical witness has to answer are:—1. Whether the wounds were inflicted during or after birth, or, to adopt the legal view of the matter, before or after the child was *entirely* in the world in a living state: for, according to the decisions of our judges, a child is not considered living in law, at least its destruction does not appear to be *murder*, until the body is entirely born from the body of the mother. In most cases it will be utterly impossible for a medical witness to return any answer to a question put in this form. All that medical evidence can pretend to show is, whether a child was living or not when the wounds were produced: for whether the *whole* of its body was or was not in the world at this time, they will possess precisely the same characters. In a few cases only, a conjectural opinion may be formed from the nature, extent, and situation of these injuries.—2. The witness will be required to state whether the wounds were inflicted before or after death.—3. Whether they were sufficient to account for death.—4. Whether they originated in accident or criminal design. The child may have been destroyed by *burning*, and evidence must then be sought for by an examination of the state of the skin. All these questions have been fully considered in treating the subject of Wounds (vol. 1, p. 449), and they therefore do not require any further notice in this place.

A case of infanticide was tried at the Buckingham Summer Assizes, 1840 (*Reg.* v. *Wood*), in which the main question was, whether five severe wounds found on the head of a child were inflicted before or after death, and accidentally or criminally. The mother confessed that the child was born alive and had cried, but that it had died in five minutes after its birth. Its body was buried, and it was assumed that the wounds might have been accidentally inflicted after death with a spade which had been used for the burial. The medi-

cal witness attributed death to the wounds, which, in his opinion, could not have been accidentally produced; but he very properly admitted, in cross-examination, that the wounds would have presented the same appearances had they been inflicted immediately after death, while the blood was in a fluid state. Answers to questions of this kind can of course be given only in those cases in which the body has been examined soon after the infliction of the wounds. It would be extremely hazardous to pronounce an opinion when the child has been long dead. In the case of *Reg.* v. *Taylor* (York Lent Assizes, 1843), the child had been dead about a year; its body was found in a garret, but it was so much dried up that the medical witnesses were unable, with certainty, to state the sex. The left arm had been removed from the body, and on the throat was a cut extending nearly from ear to ear, which was considered to have been made by some sharp instrument; and from the retraction of the edges of the wound, the witnesses thought that it must have been produced either during life or immediately after death. The prisoner was acquitted. In this case there do not appear to have been any good medical reasons for the opinion expressed respecting the time at which the wound had been caused. Certainly the retraction of the edges could furnish no evidence in a wound produced a year before, in a body so dried up as to render the recognition of the sex difficult. This may have been a case of child-murder, but there was no medical proof of it: it was not even proved that the child had come into the world living.

Incised wounds found on the body of a new-born child may be referred to the use of a knife or scissors by the prisoner in attempting to sever the navel-string, and they may therefore be due to accident. This point should not be forgotten, for a wound even of a severe kind might be thus accidentally inflicted. In such cases we should always expect to find the navel-string *cut*, and not lacerated. The end of it may, for the purpose of examination, be stretched out on a piece of white card. In the case of *Reg.* v. *Wales* (Central Criminal Court, Sept. 1839), it was proved that there was a wound on the right side of the neck of the child, not involving any important blood-vessels, although it had caused death. The medical witness allowed that it might have been accidentally inflicted in the manner suggested, and the prisoner was acquitted. As this question may be unexpectedly put at a trial, a witness should prepare himself for it by a careful examination of the wound and of the navel-string. This will in general suffice to show whether an incised wound has been produced accidentally in the manner alleged, or by criminal design. Intra-uterine wounds have been in some cases met with. Dr. Priestley has described one which involved a part of the scalp. ('Med. Times and Gaz.' March 12, 1859.) These are not likely to be mistaken for extra-uterine wounds.

Marks of external violence, however slight, should not be overlooked: minute punctures or incisions externally may correspond to deep-seated injury of vital organs. The spinal marrow is said to have been wounded by needles or stilettoes introduced between the vertebræ, the skin having been drawn down before the wound was inflicted, in order to give to it a valvular character, and to render it apparently superficial. The brain is also said to have been wounded, by similar weapons, through the nose or the thinner parts of the skull (the fontanelles). In some instances the body of a child is found cut to pieces, and the allegation in defence may be that the child was still-born, and the body had been thus treated merely for the purpose of concealment. Dr. Toulmouche has reported a case of this kind, which was the subject of a trial in France in 1852. As the woman had not destroyed the lungs, experiments on these organs gave satisfactory results of perfect respiration. The cavities of the heart and great vessels were empty: the body was generally drained of blood, and the skin throughout very pale. This led to the inference that the mutilations must have been inflicted while the child was living; and as all the parts were

healthy, and no natural cause of death was apparent, Dr. Toulmouche ascribed the death of the child to the wounds. The woman was convicted, and condemned to twenty years' confinement in the galleys. ('Ann. d'Hyg.' 1853, vol. 2, p. 200.) In this country she would probably have escaped under a verdict of 'concealment of birth,' and have been sentenced to a year's imprisonment.

Marks of violence on the head.—It has been elsewhere remarked (*ante*, p. 386) that during a protracted delivery there is formed on the head of a child a tumour containing either serum, blood, or a mixture of the two. Non-professional persons may, when a woman has been secretly delivered, ascribe a tumour of this kind to violence, whereas it may really have been produced by natural causes. The tumour is generally situated on one of the parietal bones, its situation depending on that part of the body which presents during delivery. After the discharge of the waters, the scalp is firmly compressed by the mouth of the uterus, and subsequently by the os externum. This pressure interferes with the circulation through the skin, and causes the compressed portion of the scalp to swell. In the simplest form of this tumour serum only is found in the swollen part: occasionally this is mixed with blood, and there are small ecchymoses of the scalp, as well as of the pericranium and skull, but there is generally no injury to the bones, nor is there any laceration of the skin externally. In other cases blood is found effused in the tumour either under the scalp, the membrane covering the skull (pericranium), or within the skull itself. The term *Cephalœmatoma* or *Caput succedaneum* is applied to tumours which have this natural origin (p. 386, *ante*). The sanguineous variety is more likely to be confounded with the effects of violence than the serous tumour; but it is identified by the scalp being always uninjured, although this may present redness and lividity.

Violence from blows or falls which would produce bloody effusions beneath the scalp, or within the skull, would in general be indicated by injury to the skin or by fracture of the bones. At the same time the following case, which occurred to Dr. West, shows that caution is required in forming an opinion. A child died twenty-three days after birth. The tumour (cephalæmatoma) was about the size of a walnut originally, but it had extended so as nearly to cover the right parietal bone. On dissection it was found to be filled with coagulated blood, beneath which was a layer of dense fibrinous matter. The right parietal bone presented a fissure with clean edges running from the coronal suture obliquely backwards and upwards. On the inner surface of the bone was an effusion of blood between the cranium and dura mater more than half an inch in thickness, and occupying the whole of the hollow of the parietal bone. There was no reason to doubt that the fracture and effusion were the results of compression during delivery; they had not been occasioned by external violence. ('Trans. of Med. Chir. Soc.' vol. 28: see, for further information on this subject, 'Churchill on the Diseases of Children,' p. 66.)

Fractures of the skull. Effusions of blood.—The only injuries to the head which require to be specially considered in relation to infanticide, are fractures of the skull; and here the question to which we may chiefly confine our attention is, whether the fracture arose from accident or criminal violence. The rules for determining whether these injuries were inflicted during life or after death have been elsewhere considered. (See WOUNDS, vol. 1, p. 662.) It may be remarked that there are no certain signs by which a fracture before death can be distinguished from a fracture recently after death from some other cause. It has been said, that in post-mortem fractures the edges are smooth, and not infiltrated with blood; also that the blood effused is not coagulated. No reliance can be placed on these appearances. They may be equally met with in violence to the living or recently dead body. On this question, as well as on

accidental fractures of the skull during delivery, see a paper by Dr. Skrzeczka. ('Ann. d'Hyg.' 1870, 1, 227; also 'Vierteljahrs.' 1866, 2, 69; and 'Ann. d'Hyg.' 1867, 2, 220.) Dr. Adamkiewicz has published some remarks on this subject, in reference to a case which came before him, in Horn's 'Vierteljahrsschrift,' 1864, 2, 211.

Although it has been a matter of frequent observation, that great violence may be done to the head of a child during parturition without necessarily giving rise to fracture, yet it is placed beyond all doubt that such an injury may occur by the expulsive efforts of the uterus forcing the head of a child against the bones of the pelvis. Even the violent compression which the head sometimes experiences in passing the mouth of the uterus, may suffice for the production of fracture. (See 'Edin. Med. and Surg. Jour.' vol. 26, p. 75.)

For the better understanding of the description of these injuries, illustrations are annexed. Figures 172 and 173 represent the skull of a child at maturity;

Fig. 172.

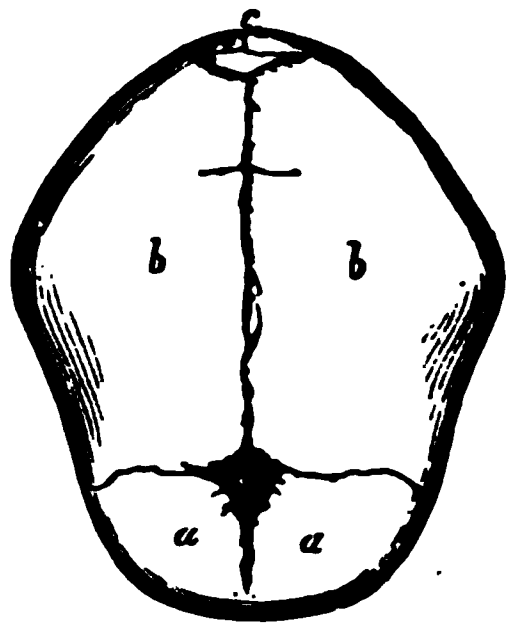
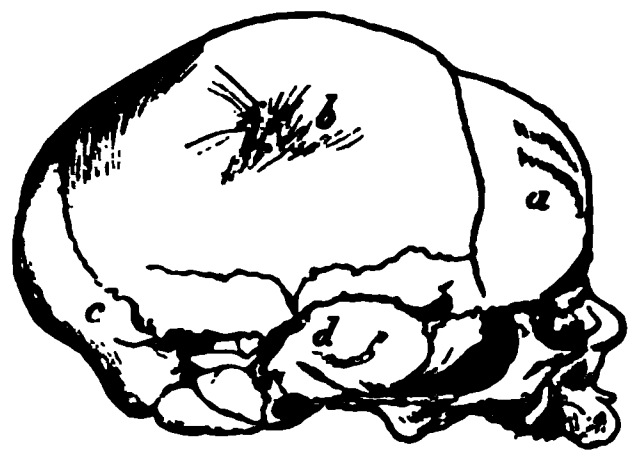


Fig. 173.



The skull of the child at the ninth month reduced to one-third of the natural size.
View of the vertex. Lateral view.

they are taken from specimens in Guy's Hospital Museum. *a a*, the frontal bone, divided by a suture in the centre: *b b*, the parietal bones (most commonly the seat of fracture), separated from each other by a line which marks the course of the sagittal suture. Another line marks their separation from the frontal bone; this represents the course of the coronal suture: *c*, the occipital bone, separated from the parietal bones, *b b*, by the lambdoidal suture; *d*, the squamous plate of the temporal bone; *e*, the interior fontanelle—a space between the parietal bones and the frontal bone. The shaded space represents the membrane which at this age supplies the place of bony matter. The posterior fontanelle is situated between the two parietal bones and the occipital bone: it is here scarcely seen, owing to the aspect in which the skull is viewed.

It was formerly supposed that fractures of the skull in new-born children were always indicative of criminal violence; but cases which have occurred in obstetric practice have established the certainty of their accidental occurrence. These accidental fractures, it is to be observed, are generally slight: they commonly amount merely to fissures in the bones, beginning at the sutures, and extending downwards for about an inch or less into the body of the bone. The frontal and parietal bones are the only bones liable to be fissured or fractured during the act of parturition. In the greater number of cases reported, the parietal bones only have presented marks of fracture. ('American Jour. Med. Sci.' Jan. 1853, p. 254; and American edition of the 'Manual of Medical Jurisprudence,' by Dr. Hartshorne.)

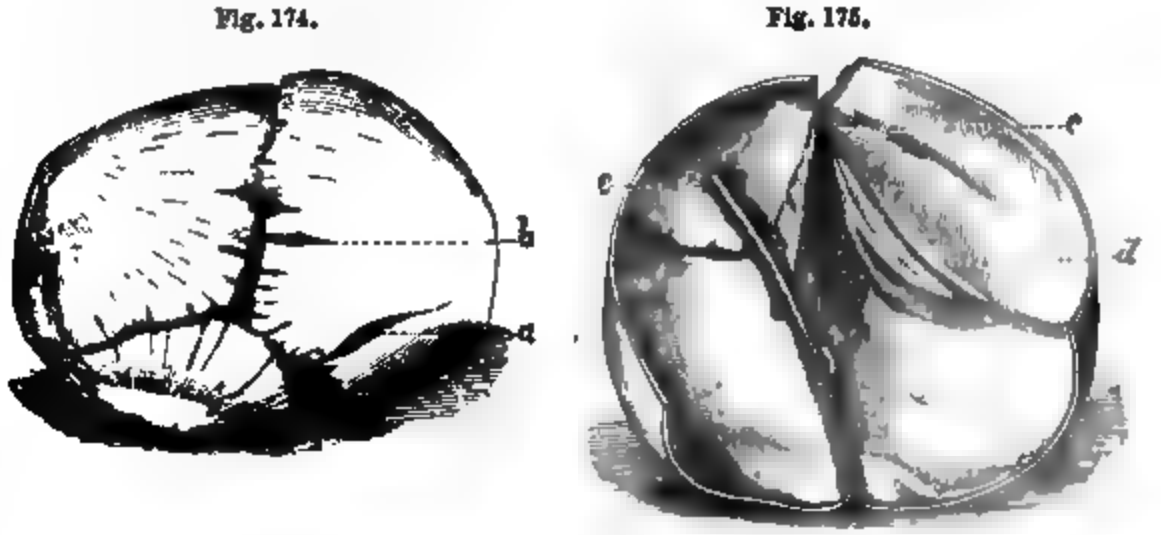
The most complete history of these accidental injuries to the skull of a new-

born child has been given by Dr. Schwörer, of Freiburg. ('Beyträge zur Lehre von dem Thatbestande des Kindermordes, etc., nebst Mittheilung eines Falles von tödtlichem, während der Geburt, ohne Einwirkung äusserlicher Gewalt entstandenem Schädelbrücke eines Kindes.' Freiburg, 1836, p. 38.) In one instance, he himself delivered a woman after a labour of twenty-seven hours. While the head of the child was at the outlet, the uterine contractions ceased for an hour; the child was then suddenly expelled, and Dr. Schwörer received it in his hands, so that its body did not come in contact with anything that could produce physical injury. The child did not breathe when born, but it showed evident signs of life. The pulsations of the heart and umbilical cord were distinctly perceived; these gradually ceased, and no effort could restore the child or bring about respiration.

The most important fact connected with the body, was the condition of the head. There was a considerable swelling of the skin at the top of the head, chiefly over the right parietal bone, and beneath this a quantity of dark-coloured blood was effused. Two fissures or slight fractures were perceived in this bone—one (*b*) passing from the sagittal suture towards the centre of the bone, about half an inch in length (see fig. 174, *a*, *b*,); and a second, about an inch long (*a*), passing from the lambdoidal suture at the back part of the parietal bone, also towards the centre. There was no doubt that these fissures or fractures in the bone, with the effusion of blood beneath, were produced by the action of the uterus alone during delivery.

The annexed engravings are taken in a reduced form from those given by Schwörer. Fig. 174 represents the exterior of the bony skull, and fig. 175 the

Fig. 174. Fig. 175.



Fractures of the fœtal skull during birth.

External view. Internal view.

interior; *c* shows the appearance of the principal fissure on the inside; *d* represents the situation between the two fissures of an effusion of blood, amounting to about two drachms in a coagulated state—it was between the arachnoid membrane and the dura mater; *e* indicates the course of the longitudinal sinus or great blood-vessel of the brain.

From these appearances, and in an absence of all knowledge of the facts, Dr. Schwörer considers that the following conclusions would have been drawn:—1st, that this child was born capable of living, and probably lived after its birth; and 2ndly, that it had died a violent death from injuries inflicted on the head. A woman delivered of an illegitimate child in secret might, although innocent, have thus been compromised in a charge of murder (op. cit. p. 44). As the lungs sank in water entire and divided, it is highly probable that in this country the case would have been stopped by a coroner's jury, on medical evidence that the child was still-born. Supposing, however,

that further proceedings had been taken, the amount of violence to the head was comparatively too slight to justify a medical opinion that it absolutely indicated an act of murder. The bones were merely fissured, not dashed in or displaced, and the brain was uninjured; the fissures were slight, and the amount of blood effused was very small for an act of homicidal violence involving the skull. Dr. Schwörer is right in suggesting that such cases should inspire caution in giving medical opinions; but medical men are, at least in the present day, prepared to make full allowance for the accidental occurrence of such injuries as these during labour.

A case is reported in Casper's 'Wochenschrift' (Oct. 1840), in which about half a drachm of blood was effused on the right parietal bone, which was compressed in the centre, and presented a radiated fracture. Clots of blood were found on the dura mater. (See also 'Brit. and For. Med. Rev.' vol. 21, p. 254, and vol. 7, p. 333.) In a third case, where there was deformity of the pelvis, the child was born dead, and there were two fissures, about an inch long, in the left parietal bone; and both parietal bones were considerably flattened. (Casper's 'Wochenschrift,' Sept. 1837.) Dr. West has reported the following case of spontaneous fracture of the left parietal bone, which occurred to Dr. Götz, during a natural but tedious labour, in which the head of a child was five hours in the pelvic cavity, although the pelvis was well-formed. There were three fissures in the bone—one running into the sagittal suture, one to the inner inferior angle, and the other to the middle of the anterior edge of the bone. The child was still-born. Much blood was effused beneath the scalp, but none under the skull. ('Med. Gaz.' vol. 39, p. 288.)

In respect to these accidental fractures and effusions of blood from uterine action, it may be remarked that they are in general recognized by their very slight extent. In cases of murder by violence to the head, the injuries are commonly much more severe: the bones are driven in, the brain protrudes, and the scalp is extensively lacerated. Such severe injuries as these cannot arise accidentally from the action of the uterus during parturition. See report of a case by Dr. Wiseman, in which, in addition to severe injuries to the brain, coal-dust and minute pebbles were found driven into the skin of the head by the body being thrown from a height. ('Edin. Med. Jour.' Dec. 1855, p. 492.) In these cases, however, it may be fairly urged, that the woman was unexpectedly seized with labour, that the child was expelled suddenly by the violent contractions of the uterus, and that the injuries might have arisen from its head coming in contact with some hard surface—as a floor or pavement. It must be admitted that a woman may be thus suddenly and unexpectedly delivered while in the erect posture, although this is not common among primiparous women, and that severe injuries may be thus accidentally produced on the head of a child.

Dr. Hicks has properly called attention to the possibility of fractures or fissures of the bones of the head being caused by lateral pressure of the skull from the hands of the mother in order to aid her delivery. It would appear, however, from his experiments on this subject that such injuries may, as a rule, be distinguished from those which are the result of a deliberate attempt at murder. ('Guy's Hosp. Rep.' 1866, p. 473; also p. 415, *post.*)

Sudden delivery. The pains of labour mistaken for other sensations.—In cases like that reported by Dr. Wharrie (p. 398, *ante*), where a woman, under the impression that she was about to have a motion, sat over a large water-jug and was delivered of a child, it is proper to make full allowance for a mistake which may be compatible with innocence. A woman is often unable to distinguish the sense of fulness, produced by the descent of a child, from the feeling which leads her to suppose that she is about to have an evacuation; *and thus it is dangerous*, when a labour has advanced, to allow her to yield

to this feeling, for there is nothing more probable than that the child may be suddenly born. Mr. Rankin, of Carluke, has reported two cases of this description, where there could not be the slightest suspicion of criminality. In one, a primipara, the child was actually born under these circumstances, but its life was fortunately saved; had there been no other convenience than a privy, it must have been inevitably lost. In the second, although a case of third pregnancy, the pluriparous woman was equally deceived by her sensations. ('Edin. Month. Jour.' Jan. 1846, p. 11; see also a case in which twins were thus born, 'Med. Times and Gaz.' March 2, 1861, p. 235.) It is true that this alleged mistaken sensation forms a frequent and specious defence on charges of child-murder; but still a medical jurist is bound to admit, that an accident which occurs to women of the middle class, may also occur to the poor without necessarily implying guilt. (For a case of rapid delivery in a primipara, see 'Med. Times and Gazette,' Feb. 6, 1858.)

Power of exertion in recently-delivered women.—On these occasions, a witness will often find himself questioned respecting the strength or capability for exertion evinced by the lower class of women shortly after childbirth. Dr. Alison remarks, that many medical practitioners, judging only from what they have observed among the middle or higher ranks, are liable to be led into an erroneous opinion, which may affect their evidence. He mentions a case, in which a woman accused of child-murder walked a distance of twenty-eight miles in a single day, with her child on her back, two or three days after her delivery. (Case of *Anderson*, Aberdeen Spring Circ. 1829.) Instances have even occurred in which women have walked six and eight miles, on the very day of their delivery, without sensible inconvenience. ('Criminal Law,' p. 161.) In one case (*Smith*, Ayr Spring Circ. 1824), the woman was engaged in reaping,—she retired to a little distance, effected her delivery by herself, and went on with her work for the remainder of the day, appearing only a little paler and thinner than usual! In the case of *Macdougal* (Aberdeen Spring Circ. 1823), the prisoner, who was sleeping in bed with two servants, rose, was delivered, and returned to bed without either of them being conscious of what had occurred. Cases like the last have often presented themselves in the English Courts. A firm resolution, with a strong desire to conceal her shame, may enable a woman to perform, immediately after her delivery, acts connected with the disposal of the body of her child, which, from ordinary experience, might appear to be much beyond her strength. In *Reg.* v. *May* (Court of Exchequer, May 1857), for concealment of birth, it was proved that the prisoner, a domestic servant, had been sent to market with some poultry. On her return, she asked the boy who drove the cart to stop. He did so: she got out and went to a recess in the hedge by the side of the road, and in five minutes she was observed following the cart, and she walked home a distance of a mile and a half. She went about her usual work on that and the following day. She had been delivered of a child in the recess, and it was subsequently found there. One witness heard it cry, but it soon died (p. 178, *ante*).

Delivery in the erect posture.—A case of sudden delivery in the erect posture in a primiparous woman, without injury to the child, is reported by Dr. W. Burke Ryan, in the 'Lancet' (June 21, 1845, p. 707). The umbilical cord was, in this instance, ruptured at the distance of about two inches from the navel. This gentleman has communicated to me the particulars of a second case, which occurred in his practice in October 1852. A woman who had borne a child was suddenly delivered while standing. The child fell to the floor on its vertex, and the cord was ruptured. A small quantity of blood escaped from the part struck, but there was no open wound or fracture of the bones, and the child sustained no injury. In the case of another primiparous woman, sudden delivery took place while she was in the act of sitting down. The child was

forcibly expelled, and fell with its head on the floor of the room; it was taken up dead, the cord being still attached to it, and the placenta, which came away shortly after the birth of the child. ('Med Gaz.' vol. 37, p. 808.)

It appears, from cases collected by Dr. Klein, that fractures of the skull even under these circumstances are of rare occurrence. Out of 183 cases reported by him, in which the women were rapidly delivered while sitting, standing, or inclined on the knees—the child falling on the ground or floor—there was only one instance in which a child was killed; and there was not a single instance in which the bones of the skull were fissured or fractured, so far as could be ascertained by external examination. (Devergie, vol 1, p. 361: Briand, p. 271.) Chaussier performed some experiments on the bodies of still-born children, allowing them to fall with their heads downwards on a paved floor, from a height of eighteen inches: and he found that, out of fifteen cases, one or other of the parietal bones was fractured in twelve. Although these results are conflicting, yet Klein's observations appear more to the purpose; because they were made under circumstances in which the question would really arise in a case of infanticide. They are strikingly supported by the following case, which occurred to Mr. Blacklock. ('Lancet,' July 26, 1845.) A married woman was suddenly delivered while standing: the child fell to the floor, but sustained no injury; the navel-string was ruptured close to the navel. (See also Dr. Ryan's case, *suprà*.) A case analogous to these, also in a primipara, is reported in the 'Gazette Médicale' (26 Juin 1847). A woman, æt. 27, was delivered of a child while in the act of walking to an hospital, at the distance of a mile. She stated that she had lost a large quantity of blood. The child, which she brought in her apron, was mature and living: the navel-string had been ruptured close to the abdomen. (See also a case by Dr. Pickford, 'Med. Gaz.' vol. 42, p. 371.) A more recent instance has been reported by Mr. Dermott. ('Lancet,' March 12, 1853, p. 245.) A young married woman, æt. 23, pregnant of her first child, was delivered suddenly while in the erect posture. The child, which was healthy and full-grown, fell upon the floor, and the cord was broken off within three inches of the navel: it was separated as cleanly as if it had been divided by an accoucheur. Excepting the production of a swelling on the forehead from a bruise, the child had sustained no injury by this sudden expulsion. A similar case occurred to Dr. Chevers. ('Med. Jur. for India,' 1856, p. 253.) Dr. Coleman ('Lancet,' Oct. 1, 1864, p. 377) met with a case in which a married woman, while standing by the window of her bed-room, was suddenly delivered in his presence; she had had no warning pains, and up to an hour of her delivery had been quite well. The child had fallen on the floor, but sustained no injury; the navel-string was ruptured at one inch from the abdomen; it was bleeding, but this was soon stopped by a ligature. The mother and child did well. Mr. Twitchell met with a case in which a young woman, æt. 17, was suddenly delivered while engaged in ironing. The child fell on the floor, rupturing the cord three inches from the umbilicus, but sustained no injury. ('Lancet,' 1864, vol. 2, p. 477.) M.C., æt. 23, single, was suddenly delivered of a full-grown male child at 5.30 a.m., January 5, 1864. She stated that between 4 and 5 a.m. she felt griping pains. She suspected that her labour was coming on, and she walked to a friend's house, at 600 yards' distance, to be confined. When she had proceeded half way, she was suddenly delivered, while in the erect position, and her child fell upon the pavement. The navel-string was ruptured transversely four inches from the navel, and the placenta was expelled. She walked to the place where she intended to be confined, carrying the child, which she had wrapped in a petticoat. In about half an hour she was seen by a surgeon; he found her in bed looking perfectly well, free from pain, and merely complaining of cold. This was her first child; it was well nourished and healthy-looking. The

only injury which it had sustained by the fall was on the left parietal bone, at the junction with the coronal suture; there was here a soft tumour between two and three inches in its transverse diameter, which was slightly ecchymosed. Both mother and child did well, and the tumour entirely disappeared at the end of three weeks. The cord had been tied after the woman's arrival at the house. ('Lancet,' vol. 1, 1854, p. 637.) For another case in which twins were suddenly born without any previous warning, see 'Med. Times and Gaz.,' March 2, 1861. These observations lead to the inference that fractures of the skull are not likely to occur, yet we cannot deny the *possibility* of their occurrence: hence a barrister is fully justified in endeavouring upon this ground to exculpate a person charged with child-murder.

Dr. Swayne, of Bristol, has published in the 'Association Journal' (Oct. 14, 1853, p. 901) a case which shows that a fracture of the skull of a child may be produced when a woman is delivered in the erect posture. In this instance there was merely the appearance of a bruise on the head, and the cord was ruptured (not cut) three inches from the navel. The child did not suffer from the fall, and continued well until six days after its birth, when it was seized with convulsions and died. A fissure of about an inch and a half in length was found in the upper part of the left parietal bone. A clot of blood was found in this situation between the dura mater and bone, and there was congestion of the vessels of the membranes; with this exception there was no morbid appearance in the body. Dr. Tenbern has reported a case in which the child died from injury to the head by falling from the body of the mother in an unexpected delivery. (Horn's 'Vierteljahrsschrift,' 1870, 1, 113.) The cause of death was effusion of blood on the brain; and in this case there was no fracture or fissure of the bones of the skull. In another case which occurred to Dr. Klusemann there was sudden delivery in the erect posture, the child falling with its head on a deal floor. A large fissure was found in the right parietal bone and there was a great effusion of blood, which had caused the death of the child. There was no reason to doubt the woman's story. (Horn's 'Vierteljahrsschrift, 1866, 1, 165; see also the same journal, 1871, 2, 26.) In this, as in some other cases of delivery in the erect posture, the umbilical cord was torn through at about two and a half inches from the body.

Dr. Porter Smith, of Bath, communicated to me a case, which occurred in November 1856, in which the facts were similar to those above related. In consequence of the concealment of the body, however, the mother was charged with the murder. The right parietal bone was fractured, and there was effusion of blood internally, but there was no mark of external violence. The cord had been ruptured at a distance of two and a half inches from the navel. The stomach of the child contained the usual albuminous and mucous matters of the fœtal state, without any appearance of food. The lungs were inflated and highly crepitant; the foramen ovale and the ductus arteriosus were in their fœtal condition. The child had probably been drowned in the discharges from want of assistance at the time of birth. The woman, who admitted that the child fell from her suddenly, was acquitted. Dr. Olshausen has published four cases of sudden delivery, in each of which the child dropped from the woman, and in two of them there were fissures in the parietal bones. The children recovered from the effects of the accidents. ('Med. Times and Gazette,' Sept. 1860; 'Amer. Jour. Med. Sci.' Jan. 1861, p. 279.) Other cases of rapid delivery in the erect posture are reported in the 'Lancet' (Jan. 5, 1861, p. 13). In these there was no injury to the child, although in one case the delivery took place on the deck of a vessel.

A medical witness would find no difficulty in determining the probability of this explanation of the accidental origin of such fractures, if he were made acquainted with all the facts connected with the delivery. But the acquisition

of this knowledge must be accidental; and it will, in general, be out of his power to obtain it. Sometimes the fractures will be accompanied by incisions, punctures, or lacerations of the scalp or face: in such cases, although the origin of the fractures might be accounted for by the alleged fall during parturition, the cause of the other injuries would still remain to be explained. (See the case of *Reg.* v. *Reeve*, Cent. Crim. Court, February 1839, and *Reg.* v. *Stevens*, Bodmin Lent Ass. 1845.) Injuries of this nature, with the fact that there are bruises or contusions as well as fractures not connected with each other in various parts of the skull, and depending on different acts of violence, would be inexplicable on the hypothesis of an accidental fall. Dr. Caspari met with the following case. A girl was delivered in secrecy. She at first denied that she had had a child, but afterwards produced the dead body. It was mature and had breathed. There were some marks as of pressure about the neck, and extensive effusions of blood beneath the scalp in various parts of the head. There was no fracture, but a fissure in one of the bones of the head. She said she had been suddenly delivered while standing up, and found that the child had fallen from her and was dead. Dr. Caspari considered that this would not explain the condition of the head, which presented the effects, not of one, but of several distinct acts of violence, and the death of the child was referred to the injuries found on the head. The woman afterwards confessed that she was delivered while lying on the bed, and that she had then struck the child on the head and body with a wooden shoe. (Horn's 'Vierteljahrs.' 1870, 2, 204.)

The following case occurred to Mr. Kesteven, of Holloway:—An inquest was held in February 1854 on the body of a female infant, of which a young woman had been delivered on the 21st of December 1853. The infant had been born, according to the statement of the mother, in the pan of a water-closet on the ground-floor of the house, and was afterwards carried by her up two pair of stairs, and placed beside her in bed. She admitted that the child had been born alive, but stated that it was dead when she lifted it up from the pan to carry it to the bedroom. The navel-string was torn at the distance of four inches from the abdomen. The child, she alleged, had fallen into the watercloset pan. No trace, however, of blood or other discharge was found on or near the seat of the closet; while upon the opposite side of the chamber the floor was stained with blood, which had been imperfectly wiped up. On an examination of the body of the infant, it was found to be a well-formed mature child, weighing seven pounds. The lungs had been fully expanded to their margins, covering the heart, and floating on water with or without the latter organ. The scalp presented no trace of injury; there was only the usual scalp-tumour, and on dividing the skin there was some ecchymosis at this part. The bones of the skull were found extensively fractured. There was a horizontal fracture nearly an inch long over each orbital prominence; upon the right frontal eminence the bone was broken and depressed, in an acute triangular form, three-quarters of an inch in length. The parietal bones on each side were fractured vertically from their eminences downwards, to the extent of an inch and a quarter; on the left side the lower end of this fissure was joined by another of similar extent, passing horizontally forwards at a right-angle to the edge of the bone. Several smaller fractures were found at different parts of the upper surface of the skull; they were not apparently connected with each other. Within the cranium, blood was extravasated on the surface of the brain, and in the membranes. No fractures were detected at the base of the skull. The mother alleged that the injuries to the head were owing to the child having fallen into the pan of the closet. This explanation, however, was inadmissible, as it was very doubtful whether the body *of the child* had been in the pan at all. Even supposing the child to have thus

fallen, the distance was too small to have caused such an amount of injury situated on various parts of the skull; besides which, as the child would have passed in an oblique direction forwards from the outlet, it would probably have glided safely down by the side of the pan. In the absence of evidence as to the mode in which the injuries were inflicted, it was suggested that they might have been caused by the mother having fallen upon the child on her way upstairs; and this hypothesis was ultimately adopted by the coroner's jury. There was no doubt that the child's death was caused by the injuries to the head; and the jury took what is called a lenient view of the facts, in rejecting the woman's explanation of the cause of the violence, and in assuming that such a variety of severe injuries to the bones of the head could have been produced by the mother falling upon the body of the child. (See another case in 'Med. Times and Gaz.' April 4, 1857, p. 347.)

In *Reg.* v. *Gibson* (Gloucester Assizes, 1864), the medical evidence was to the effect that the skull of the child was fractured and much blood was effused on the brain. The right lung contained air—and the left lung also, but in smaller quantity; they both floated on water. The prisoner admitted to the witness that the child cried twice, and accounted for the fracture of the skull by asserting that the child had dropped from her in a lane. She wrapped it up, and soon afterwards found that it was dead. A stone having blood and hair upon it was picked up near the body. The prisoner was acquitted of the alleged murder. In *Reg.* v. *Strangeways* (C. C. C. Dec. 1864), there was not only a fracture of the right parietal bone, but the throat was cut, and, according to the medical evidence, with a knife. From the state of the lungs it was evident that the child had breathed, but the medical witness declined to say that it had had an existence independently of the mother. The defence here was, that the child had dropped from her while she was standing at her work, and that it fell on the kitchen fender. There were, however, no marks of blood on the fender, and the wound in the throat was inconsistent with such a statement. The medico-legal importance of this subject will be further apparent from the evidence given in a case tried before the Criminal Court of New York in November 1834. ('Med. Gaz.' vol. 18, p. 44.) One of the witnesses in this case positively denied that the bones of the head could be fractured by the action of the uterus during parturition! It appeared highly probable that the fracture had in this instance been occasioned by the accidental fall of the child during delivery; and the prisoner was acquitted.

Dr. Wharrie has published a case, the subject of a criminal charge, in which it is probable that a fracture of the head of a child was produced by the expulsive action of the uterus. The body had been found secretly buried; it was fully developed, but the child had evidently not breathed. The navel-string had been cut and tied; six inches of it still remained attached to the body. On the left side of the cranium, near the summit, there was a small effusion of blood; and on removing this, a fissure half an inch in length was found in the edge of the left parietal bone, close to the line of the sagittal suture, and near the posterior fontanelle. On shaving off the hair there was no discolouration, nor any mark on the skin indicative of a blow. There was no evidence to show that any violence had been used to the child at its birth, and from the description of the fissure, it was a fair presumption that it had arisen from the muscular contractions of the uterus during delivery. ('Cormack's Monthly Jour.' Nov. 1845, p. 847.) The possible occurrence of an accidental injury of this kind has been strained in several cases of child-murder, to explain the origin of fractures which, however, could not be fairly assigned to such a cause. A case was tried at Glasgow, in April 1852 (case of *Ann Irwin*), in which the late Dr. Easton gave evidence. There was no doubt, from the state of the lungs, that the child had fully breathed, and there was violence to the head which

satisfactorily accounted for its death. The whole extent of the right side of the head was deeply ecchymosed, and there was a large quantity of coagulated blood lying beneath the ecchymosis. In the centre of the right parietal bone there was a fracture extending across the vertex for fully four inches, and involving a part of the parietal bone on the opposite side; it was in a continuous even line, not radiated and not depressed. The pericranium, bones, and soft parts in the track of the fracture were deeply ecchymosed, while on the surface of the brain, particularly on the right side, there was a copious effusion of clotted blood. It was impossible to refer severe injuries of this kind to the action of the uterus in delivery, or to violence applied after death. The prisoner alleged that the child was still-born. (See 'Edin. Monthly Jour.' June 1825.) In the case of *Reg.* v. *Mussett* (Bury Lent Assizes, 1856) the head of a child was almost flattened from the violence sustained. It was clear that no fall or other accident could explain this condition. Some fresh blood and a single hair were found on a shelf in the cellar, for which the prisoner accounted by stating that she had there killed a rabbit. A microscopical examination, however, showed that it was human hair, and not the hair of a rabbit. (See fig. 106, vol. 1, p. 512, No. 6.) The medical evidence established from the state of the lungs that the child had breathed, and that it had had an independent existence. The prisoner was convicted. The reader will find an elaborate medico-legal paper on fractures of the skull in new-born children, by the late Professor Casper, in his 'Vierteljahrsschrift' (1863, 1, 1, and by Dr. Wiebecke, of Hildesheim, in the same journal, 1871, 1, 86).

Length of the umbilical cord.—It has been recommended on these occasions, that we should observe the length of one or both portions of the umbilical cord, and notice whether it is cut or lacerated, as these facts may, it is presumed, throw some light on the question. But a medical witness can seldom procure the entire cord for examination, although it will generally be in his power to ascertain whether it was cut or lacerated, by examining the portion which is attached to the body of the child. The cord varies in length—the average being from eighteen to twenty inches: but it has been met with so short as six inches ('Lancet,' June 13, 1846, p. 660), and even five inches ('Lancet,' July 11, 1846, p. 49). In a twin-case which occurred to Mr. Stedman, of Guildford, the cord was only *four inches* long. (See p. 387, *ante*, also 'Lancet,' Aug. 28, 1841.) On the other hand, in one instance, where it was found twice twisted round the child's neck, it was fifty-three inches long. Dr. Churchill found, out of 391 cases, that the shortest cord was twelve inches, and the longest fifty-four inches in length. In January 1850, Dr. Tyler Smith presented to the Westminster Medical Society a cord fifty-nine inches and a half in length. In a case reported by Mr. Wood it was sixty-one inches long, and coiled twice round the abdomen of the child. ('Med. Gaz.' vol. 45, p. 263.) As the whole of the cord can rarely be obtained, it is unnecessary to discuss the question, whether it was long enough to admit of the falling of the child without rupture. It has been remarked, that when the cord is ruptured from accidental causes during delivery, the rupture takes place either near to the placental or the navel end, more commonly within a few inches of the navel. In twenty-one of the cases observed by Klein, it was found to have been forcibly torn out of the abdomen; but it may be torn or lacerated at any part of its length, although the rupture is commonly observed near to one extremity. Among the cases of sudden delivery which occurred to Dr. Olshausen, the cord was torn through at three inches from the navel in one, and no bleeding followed. In two the cord was torn through its middle, and at first there was great bleeding; in three other cases it was torn close to the navel, and no bleeding had occurred. In four the cord was torn at five or six inches from the navel, and there was no bleeding, although it remained untied for ten minutes.

In Reg. v. Martin (Lewes Lent Assizes, 1860), the medical witness was

asked by the judge whether a rupture of the cord might not lead to fatal bleeding. The above facts show that a rupture of the cord is not necessarily fatal, even when the circumstances are unfavourable to the child by reason of the closeness of the rupture to the abdominal end. It does not appear that the examination of the cord can throw any light upon the origin of these accidental fractures of the cranium during delivery.

Effusions of blood.—In fractures of the bones of the head in new-born children, the presence of effusions of blood on the outside of the skull, or on the membranes within, is one of the most common appearances. Effusions of blood beneath the skin of the scalp are by no means uncommon in new-born children, and are not necessarily indicative of criminal violence. Each case, however, must be decided by the circumstances attending it. Effusions on the membranes and in the substance of the brain are generally the results of great violence to the head. See on this subject a paper by Dr. Elsässer (Henke's 'Zeitschrift der S. A.' 1842, 2, 228); and another by Dr. Simon (in Horn's 'Vierteljahrsschrift,' 1864, 2, 50).

Injuries accidentally sustained in utero.—A practitioner must remember that if, while in an advanced state of pregnancy, a female should accidentally fall, the child may sustain an injury by a blow through the abdominal parietes. This is not to be strained into a specious defence for violence which has obviously occurred subsequently to birth, but the fact itself is of sufficient importance to merit attention, as the following case will show:—A pregnant woman, within five days of the ordinary term of gestation, fell, while running, so that her abdomen struck sharply against an angular stone. There was an immediate loss of blood, and the movements of the child ceased. Four days after the accident, parturition came on. Dr. Stanelli found the head of the child much enlarged, and in a putrid state. The woman died in an hour. On examining the child, the skull was found almost crushed, the parietal having become separated from the temporal bones as if by external violence. The marks of injury were entirely confined to the head. ('Gazette des Hôpitaux,' Nov. 7, 1846, p. 523.)

In injuries of this kind resulting from falls, it is probable that the child will be born dead; there may also be marks of violence on the abdomen of the woman. Some observers have described cases in which the limbs of the fœtus in utero have become deeply indented or spontaneously amputated, by the twisting of the umbilical cord around them. ('Dublin Hospital Gazette,' Jan. 1846, p. 153.) It is not possible, however, that these or other accidental injuries before birth could ever be mistaken for violence inflicted on the body of a child after its birth. A remarkable case of this kind has been communicated to the 'Med. Times and Gazette' (Dec. 10, 1853, p. 604), by Mr. Maclaughlin, in which a child was born without limbs. It is difficult to account for the occurrence of such a singular case as this; but practically, it could have occasioned no medico-legal difficulty had the body of the child been found dead, since the absence of the limbs could not have been referred to an act of mutilation. Dr. H. Barker, of Bedford, has directed attention to the subject of intra-uterine fractures, in their pathological and medico-legal relations. He advises that the bones of the body should be examined in reference to their strength, osseous development, and other physical characters. It will probably be found, as in fractures in adults from slight causes, that the bones are unnaturally brittle: in such a case, due allowance should be made for the occurrence of an intra-uterine fracture, as the result of a fall during pregnancy. ('On Intra-uterine Fractures,' p. 21, 1857.)

Twisting of the neck.—Children are sometimes destroyed in the act of birth by the neck being forcibly twisted, whereby a displacement of the cervical vertebræ, with injury to the spinal marrow, may occur and destroy life. Such injuries are immediately discovered by an examination of the body. It should

be remembered that the neck of a child is very short, and that it always possesses considerable mobility.

Violence in self-delivery.—When the marks of violence found on the head, neck, or body of a child cannot be easily referred to an accidental fall, it is common to ascribe them to the efforts made by a woman in her attempts to deliver herself, the destruction of the child being an accidental result of these efforts. A medical opinion in such cases must depend upon the nature, situation, and extent of the injuries; and each must be therefore decided by the circumstances attending it. (*Reg.* v. *Horder*, Abingdon Summer Assizes, 1840; *Reg.* v. *Trilloe*, Hereford Summer Assizes, 1842; and *Reg.* v. *Turner*, Worcester Winter Assizes, 1843.) In two of these cases the children were admitted to have been born living: in the one the violence was chiefly confined to the head, and the prisoner was acquitted; in the other the marks of violence were upon the neck, and the prisoner was convicted. These cases show the uncertainty attendant on this kind of defence. (For other instances, see the 'Brit. and For. Med. Rev.' vol. 8, p. 521.) Sanguineous tumours simulating fractures are sometimes found on the heads of new-born children (p. 403, *ante*). These depend on natural causes, and must not be confounded with marks of violence wilfully inflicted. ('Med. Gaz.' vol. 36, p. 1082.) They may be known by the unruffled state of the skin. A medical witness, however, should be prepared to allow that a woman at the time of her delivery, owing to pain and anxiety, may be deprived of all judgment, and may destroy her offspring without being conscious of what she is doing. It is therefore a sound principle of law that mere appearances of violence on a child's body are not *per se* sufficient, unless there is some evidence to show that the violence was knowingly and intentionally inflicted, or the appearances are of such a kind as of themselves to indicate intentional murder. (Alison.) But, judging from cases which have hitherto occurred, it would be difficult to suggest any appearances which would be considered by a jury sufficient to indicate wilful murderous violence.

When the skull of a new-born infant is found to be fractured, the question put to a medical witness may be—Is the degree of injury such as to be consistent with the view that it was accidentally caused during delivery, either by the woman herself, or by some person who was present? Dr. Hicks was called by a midwife to aid the delivery of a woman. On examination he observed that the skull was fractured through the parietal bone on one side, and there was a slight fracture of the edge of the occipital bone, with a scalp-tumour. The head of the child was at the brim of the pelvis, and the fractures had been produced by the midwife in her attempts to push the head back into the cavity. The woman was delivered by instruments, and in such a case a woman would not be able to deliver herself. In another instance a new-born child had a fracture through the arch of the skull, from one side to the other, and a fracture in the frontal bone on one side. The jaw was broken, the angle of the mouth lacerated, and the arm-bone (os humeri) was also fractured. With this amount of injury it is remarkable that there was no appearance of ecchymosis externally. The woman who had been delivered of the child was charged before a magistrate with wilful murder; and the question was, Had she, in attempts to aid delivery, produced this violence on the body by seizing the head and violently compressing it, or had the injuries resulted from the body falling on the floor of the room. Conflicting medical opinions were given, but Dr. Hicks, who was called as a skilled expert, admitted that the injuries might have been possibly inflicted by the prisoner on the child in her attempts at self-delivery.

We have elsewhere considered how far falls may produce fractures and other marks of violence on the skull of a new born infant, but it will now be necessary to determine how far pressure on the head may produce fractures

which might lead to a suspicion of murder. A woman in self-delivery can only resort to pressure. Dr. Hicks performed various experiments on the heads of still-born infants. In one instance by sudden lateral pressure he produced a fracture through the arch of the cranium, but the bones generally yielded to the force without breaking. When, however, one side of the head was laid on a hard and resisting surface like the floor, and the other side was compressed firmly and suddenly, a fracture was produced in the parietal bone to the centre, although the bones of the head were firmly ossified. In two other experiments on large children with firmly ossified skulls, lateral pressure with both hands, one on each side, caused no fracture or injury such as could be mistaken for homicidal violence. There was a fissure of about half an inch in the left parietal bone, produced not so much by pressure as by an indentation of the bone. The appearances produced by pressure on the head of a still-born child, after a severe labour, were as follows:—there was a large bloody scalp-tumour over the right parietal and occipital bones; liquid blood oozed out on section; and the veins on the inside of the skull were highly congested, especially on the part beneath the scalp-tumour. The fissure produced on the parietal bone was, however, too slight to be consistent with the theory of homicidal violence. (See a paper on this subject by Casper, 'Vierteljahrsschrift,' 1863, 1, 20.) It follows, from these experiments on the dead bodies of new-born children, that fractures of the skull are not easily produced under the conditions in which a woman would be placed in delivering herself. The bones, as in natural delivery, yield to great pressure without breaking. Their composition and elasticity, as well as the yielding of the parts in the situation of the sutures, tend to counteract the effects of manual violence thus applied to the head.

Severe fractures with great depression of the bones, and the co-existence of lacerated wounds of the scalp with severe injuries on other parts of the body, are not consistent with the theory of their production in self-delivery. Nevertheless, as in the following case (*Reg.* v. *Sheppard*, Winchester Winter Assizes, 1863), such violence even when plainly homicidal may, under the present state of the law, be treated as accidental. The medical evidence in this case showed that the new-born child had breathed, and there was no apparent natural cause for death. There were marks of finger-nails on the neck, evidently indicating attempted strangulation. The bones on each side of the head were crushed *inwards;* there was much blood effused between the dura mater and the skull, and this had caused pressure on the brain. A fall from a standing labour, or accidental force applied during delivery, could not have produced these appearances. They were caused, in the opinion of two medical witnesses, by the direct application of violence to the head of the child, and more than one blow must have been given to have produced them. In charging the jury upon the cause of death, the learned judge is reported to have said:—'The medical men had attributed it to the combined effect of strangulation and violence to the head. It might, however, be a theory that the struggles of a young woman during parturition might have occasioned the injuries, or she might in her weakness have fallen upon the child while on the floor. Did the medical evidence satisfy them beyond a reasonable doubt that this young woman had murdered her child?' The jury returned a verdict of *Not Guilty.* It is obvious from this and other cases of a similar kind, that there is scarcely any amount of violence affecting the head of a new-born child which might not be theoretically assigned to the act of a woman in self-delivery: medical facts and opinions are generally disregarded in these cases.

Conclusions.—The conclusions to be derived from the contents of this chapter are:—

1. That a new-born child may die from violent causes of an accidental nature.

2. That some forms of violent death are not necessarily attended with external signs indicative of violence.

3. That a child may be accidentally suffocated during delivery.

4. That the usual marks of death from suffocation or drowning are not apparent, except in the bodies of children which have breathed.

5. That the state of the umbilical cord may often furnish important evidence.

6. That some females recently delivered may have strength to exert themselves and walk great distances.

7. That a new-born child may speedily die from exposure to cold or from want of food.

8. That slight fractures of the bones of the cranium may arise from the action of the uterus on the head of the child during delivery.

9. That women may be unexpectedly delivered while in an erect posture: the umbilical cord is under these circumstances sometimes ruptured, and the child may or may not sustain injury by the fall.

10. That the violence found on the body of a child may be sometimes referred to attempts innocently made by a female to aid her delivery.

CHAPTER 83.

DEATH OF THE CHILD FROM STRANGULATION—STRANGULATION BY THE NAVEL-STRING—ACCIDENTAL MARKS RESEMBLING THOSE OF STRANGULATION—CONSTRICTION BEFORE AND AFTER DEATH—BEFORE AND AFTER RESPIRATION—BEFORE AND AFTER ENTIRE BIRTH—BEFORE AND AFTER THE SEVERANCE OF THE NAVEL-STRING—CONSTRICTION WITHOUT ECCHYMOSIS—DEATH FROM POISONING.

AMONG the forms of violent death which are almost always attended with appearances indicative of criminal design are the following:—

7. STRANGULATION.

The destruction of a new-born child by strangulation is not an unfrequent form of child-murder: and here a medical jurist has to encounter the difficulty, that the strangulation may have been accidentally produced by the twisting or coiling of the umbilical cord round the neck while in the uterus (see p. 388, *ante*) or during delivery. We must not hastily conclude, from the red and swollen appearance of the head and face of a child when found dead, that it has been destroyed by strangulation. There is no doubt that errors were formerly made with respect to this appearance; for Dr. Hunter observes,—'When a child's head or face looks swollen, and is very red or black, the vulgar, because hanged people look so, are apt to conclude that it must have been strangled. But those who are in the practice of midwifery know that there is nothing more common in natural births, and that the swelling and deep colour go gradually off if the child live but a few days. This appearance is particularly observable in those cases where the navel-string happens to gird the child's neck, and where its head happens to be born some time before its body.' (Op. cit. p. 27.)

Strangulation by the navel-string.—Strangulation by the navel-string can of course refer to those cases only in which it becomes firmly twisted round the neck *after* the respiratory process has been established. This is rather a rare

occurrence, because under these circumstances death more commonly takes place by compression of the cord, and by the consequent arrest of circulation before the act of breathing is performed. The only internal appearance met with in death from this cause is a congested state of the cerebral vessels. The presence of ecchymosis on the scalp, as well as of lividity of the face, is very common in new-born children when the labour has been tedious and difficult; and therefore, unless there were some distinct marks of pressure about the neck, with a protrusion of the tongue, such appearances would not justify any suspicion of death from strangulation.

It has been supposed that the strangulation produced by the wilful application of any constricting force to the neck, would be known from the accidental strangulation caused by the cord, by the fact that in the former case there would be a livid or ecchymosed mark or depression on the neck. But it may be objected to this view that such a mark is not a constant accompaniment of homicidal strangulation. Severe violence to the neck commonly produces in the seat of constriction not only ecchymosis, but a laceration of the skin, muscles, and windpipe; but these appearances are not always found. In April 1861 Dr. Evans, of Sunderland, communicated to me the particulars of the case of a new-born child which had been destroyed by strangulation. Great violence had been used, but there was no trace of discolouration in the course of the ligature, or of ecchymosis in the tissues beneath. The muscles compressed were very dark in colour. The skin had been so compressed as to give the impression of coarse towelling of a close texture having been used. In most cases when a ligature is applied during life the skin on each side becomes much swollen, and presents an œdematous character. This indicates an application of violence when there is still some vital power in the body of the child. The navel-string itself may be used as a means of constriction, and the mark or depression may sometimes present an appearance of ecchymosis. Among various cases which might be quoted in support of this statement, is the following, reported by Mr. Foster. In April 1846 he was summoned to attend a lady in labour with her first child. The labour was of a lingering kind, owing to the size of the head; and the child came into the world dead. The navel-string was found coiled three times round the neck, passing under the right armpit; and upon removing it, *three parallel discoloured depressions* were distinctly evident. These extended completely round the neck, and corresponded to the course taken by the coils. The child appeared as if it had been strangled. ('Med. Gaz.' vol. 37, p. 485.) Had this child been born secretly, and the cord removed, this state of the neck might have created a strong suspicion of homicidal violence. Strangulation after birth could not, however, have been alleged, because there would have been no proof of respiration. When a blue mark is found on the neck of a child whose lungs retain their fœtal characters, it is fair to presume, *cæteris paribus*, that it has been accidentally occasioned by the twisting of the umbilical cord during delivery. Mr. Price has communicated to the same journal the account of a case in which the cord, which was short, was so tightly twisted around the neck of the child, that he was compelled to divide it before delivery could be accomplished. There was in this instance a deep groove formed on the neck, conveying the impression to himself and a medical friend that, in the absence of any knowledge of the facts, they would have been prepared to say that the child had been wilfully strangled by a rope. ('Med. Gaz.' vol. 38, p. 40.) A diagnosis might have been formed, as in the preceding case, by examining the state of the lungs. Dr. Mutter met with a case in which a child was born dead, and the cord was tightly twisted round its neck; when removed, the neck exhibited a livid circle of a finger's breadth, smooth and shining; but on cutting into this mark, no subcutaneous ecchymosis was found. ('North. Jour. Med.' Jan. 1845,

p. 190.) In *Reg.* v. *Martin* (Lewes Lent Assizes, 1860), the material question was, whether a mark round the neck had been caused accidentally by the navel-string: this was denied by the medical witness. This question also arose in another important case—*Reg.* v. *Pyne* (Gloucester Winter Assizes, 1858).

Dr. Williamson, of Leith, has directed attention to an important fact connected with the state of the lungs in a new-born child, and the medical opinions which may be expressed from their condition as furnishing evidence of live-birth. Referring to Mr. Price's case, in which the cord was tightly twisted round the neck of the child, he states that in similar cases which have occurred to himself, the child has breathed immediately on the birth of the head; but, owing to the shortness of the cord, the child would have been strangled and born dead unless he had divided it. Thus, then, a child might die apparently strangled, and not be born alive, although it might have so breathed during birth that the lungs would present all the characters of respiration. If the circumstances were not known, a medical man might be led to say that the child had been born alive, and had been destroyed by strangulation. ('Edin. Med. Jour.' Feb. 1858, p. 714.) The proof of respiration, as it has been elsewhere stated, is not a proof of live-birth (p. 358, *ante*).

From these cases it will be perceived that ecchymosis in the depression furnishes no distinction between constriction produced by criminal means and that which may result accidentally from the navel-string. In the following case ('Ann. d'Hyg.' 1841, 1, 127), a woman charged with the murder of her child by strangulation appears to have been unjustly condemned. The child had fully and perfectly respired:—the lungs weighed one thousand grains, and, when divided, every portion floated on water, even after firm compression. There was a circular depression on the neck, which was superficially ecchymosed in some parts. From an investigation of the facts, this appeared to have been a case in which a mark on the neck was accidentally produced by the umbilical cord, during attempts at self-delivery on the part of the woman: she was nevertheless convicted and condemned to a severe punishment, chiefly from the opinion expressed by two medical witnesses, that a soft and yielding substance like the umbilical cord could *not* produce a depression and ecchymosis on the neck of a child during birth. They attributed the mark to the wilful application of a ligature like a garter; but the experiments of Dr. Négrier clearly show that the umbilical cord has sufficient strength to produce fatal constriction ('Ann. d'Hyg.' 1841, loc. cit.).

In the same volume of the 'Annales d'Hygiène' (at p. 428) will be found the report of another case, suggesting many important reflections in regard to the medical jurisprudence of infanticide. In this instance the navel-string and the membranes were actually used by the woman as a means of strangulation; the child had not breathed, but was thereby prevented from breathing. There was superficial ecchymosis on each side over the muscles of the neck. The defence was, that the child was born with the cord around its neck, and that it was from this circumstance accidentally strangled; but the medical evidence tended to show that the cord had been violently stretched, and employed as a means of strangulation. The child had *not breathed*, and the medical witnesses considered that it had been born dead, owing to the violence used by the woman. The cause of death here was certainly not strangulation, but arrested circulation. In the meantime, the case proves that ecchymosis (a blue mark) may be the result of violent constriction produced by the navel-string. (See the case of *Reg.* v. *Martin*, Lewes Lent Assizes, 1860; Henke's 'Zeitschrift,' 1837, 4, 352; 'Edin. Med. and Surg. Jour.' Oct. 1838, p. 282; and Casper's 'Vierteljahrsschrift,' 1859, 2, 55.) A case occurred to Mr. M'Cann. in September 1838, in which the navel-string, which was of its full length, had been *used as the* means of strangulation. It was twisted once round the neck,

passed under the left arm, over the shoulders, and round the neck again, forming a noose or knot, which, pressing upon the throat, must have caused strangulation, as the tongue was protruded, and there were other clear indications of the child having been strangled. The hydrostatic test applied to the lungs proved that respiration had been performed.

When the mark on the neck is deep, broad, much ecchymosed, and there is extravasation of blood beneath, with injury to the muscles or trachea, and ruffling or laceration of the skin, it is impossible to attribute these appearances to accidental pressure by the navel-string. The lividity produced by it in the cases hitherto observed has been only slight and partial, and unaccompanied by laceration of the skin, or injury to deep-seated parts. (For an instructive case in reference to this point, by Dr. Scott, see 'Edin. Med. and Surg. Jour.' vol. 26, p. 62.) On the other hand, in homicidal strangulation, much more violence being used than is necessary for destroying life, we may commonly expect to find great ecchymosis and extensive injury to the surrounding soft parts. On some occasions all difficulty is removed by the discovery of a rope, tape, or ligature, tied tightly round the neck; or, if this be not found, the proofs of some ligature having been used will be discovered in the indentations or irregularly-ecchymosed spots left on the skin—the depressed portions of skin being generally white, and the raised edges livid or œdematous.

It has been doubted whether a child can be born with the navel-string so tightly round the neck as to produce great depression of the skin and ecchymosis, *i.e.* to simulate homicidal strangulation, and at the same time perform the act of respiration fully and completely. It is important, therefore, when this hypothesis is raised in order to account for a suspicious mark on the neck, to examine closely the state of the lungs. Unless the cord is designedly put round the neck of the child *after* the head has protruded, the effect of the expulsive efforts of the uterus, when a coil has become *accidentally* twisted round the neck, would be to tighten it, compress the vessels, and kill the child by arresting the maternal circulation, at the same time that this pressure would effectually prevent the act of breathing. Hence the lungs usually present the appearances met with in still-born children generally; but the case which occurred to Dr. Williamson (p. 418) shows that this state of things may sometimes occur, and that a child may breathe, and die strangled by the umbilical cord before its body is entirely born. Medical witnesses, however, should not be too ready to accept such a suggestion: a careful examination of the neck will show whether a ligature has or has not been wilfully applied after birth. In *Reg.* v. *Robinson* (Lewes Summer Assizes, 1853), there was around the neck a mark of a ligature which had been *tied very tightly.* The child had fully breathed, and according to the medical evidence it had died from strangulation, owing to an accidental twisting of the cord during delivery. (*Reg.* v. *Pratley*, Oxford Summer Assizes, 1853.) In examining a suspicious mark round the neck of a new-born infant, it is proper to notice whether it does not, by its form or course, present some peculiar indentations or irregularities which may render it certain that some kind of ligature has been wilfully employed after birth. When it is found that a child has fully breathed, the presence of a deeply-ecchymosed or an œdematous mark on the neck with injury to the skin and muscles is, *cæteris paribus*, presumptive of homicidal strangulation. Death from accidental constriction by the cord during delivery should, as a general rule, leave the lungs in their fœtal condition.

Marks on the neck of a child may be accidentally produced by the navel-string without necessarily destroying the child's life. Two cases of this kind are reported by Professor Busch ('Brit. and For. Med. Rev.' vol. 10, p. 579): thus a child may be destroyed without ecchymosis being a necessary conse-

quence of the constriction produced by it. (See case by Dr. Hanff, Henke's 'Zeitschrift,' 1836, Erg. H.; also a paper by M. Tardieu, 'Ann. d'Hyg.' 1859, 1, 149.) There is much less risk of strangulation from twisting of the cord than is commonly believed. Out of 190 cases, Dr. Churchill found the cord round the neck in fifty-two children, and the shortest cord so disposed was eighteen inches long; Dr. Négrier found it round the neck in twenty cases out of 166 natural labours. ('Ann. d'Hyg.' 1841, 1, 137.)

Insulated or detached marks of ecchymosis, as from local pressure of the fingers and thumb, cannot be set down to the twisting of the navel-string. Other accidental causes may, however, here come into operation. In *Reg.* v. *Sampson* (Bodmin Lent Assizes, 1853), it was proved that there was a mark on the neck of the child, and it was charged against the prisoner that this had been caused by pressure of the fingers, *i.e.* by pinching the windpipe. The mark was described as being of a red colour, and an inch and a quarter in length; it was suggested in defence, that it might have been produced by the tying of a cap. The medical witness stated that it was below the spot where a cap would be generally tied, but the mark might by possibility have been occasioned by the knot of a tie. The prisoner was acquitted. In admitting this kind of defence, it is to be observed that the tying of a cap may have been the means by which death by strangulation was effected.

The *appearances* met with in the body in death from strangulation have been elsewhere fully considered (p. 60, *ante*). The facts of a case communicated to me, in March 1865, by Mr. Cann, of Dawlish, will serve to show the appearances as they may present themselves in a new-born child. A maid-servant in a family was secretly delivered of a child. When the body was found, it was observed to be full-grown, and there was a piece of tape which went twice round the neck, and had been tied tightly in a bow. The tongue protruded between the lips; two deep furrows were found round the neck after the removal of the tape; there was great œdema with swelling of the skin between and above them, and the right hand was clenched. The lungs were of a light-red colour: they filled the chest, were highly crepitant, and floated readily on water, even when divided into sixteen pieces, and these had been submitted to strong pressure. They weighed, however, only 626 grains. The heart was healthy: the right side contained some coagula of blood—the left side was empty; the foramen ovale was open. The scalp was much congested, the congestions almost amounting to small effusions of blood; the pia mater was also congested. The inferences drawn from these facts were, that the child had been born alive and that it had died from strangulation. The lungs were as light as they usually are in the fœtal state, showing that, although they had received air, the pulmonary circulation had not been perfectly established.

Accidental marks resembling those of strangulation.—On the forepart of the neck of a child a mark or depression is sometimes accidentally produced by forcibly bending the head forwards on the chest, especially when this has been done repeatedly and recently after death, while the body is warm. It may occur, also, as an accident during labour. Such a mark must not be mistaken for the effect of homicidal violence. It has been a question whether, independently of the constriction produced by the umbilical cord, the neck of the uterus might not cause, during its contractions, an ecchymosed mark on the neck. I am not aware that there is any case reported which bears out this view; and it seems highly improbable that any such result should follow.

The discolouration may be in detached spots or patches—situated in the forepart of the neck, and evidently not arising from the employment of any ligature. These marks may depend on the forcible application of the fingers to the neck of the child, and the indentations have been known to correspond—a fact which has at once led to a suspicion of the cause of pressure and the mode

of death. Impressions of nails or fingers on the neck do not necessarily imply that they have been caused by an attempt at strangulation. Accident during self-delivery may lead to their production. (See case by Dr. Adamkiewicz, of Rastenburg, Horn's 'Vierteljahrs.' 1868, 2, 308.) At the same time it should be borne in mind that a superficial mottling of the skin occurs after death in new-born infants, in parts where moderate pressure only may have been accidentally made. This would not be attended with ecchymosis, and its true nature would be at once determined by comparing the discoloured spots with the surrounding skin. It may be alleged, in defence, that such marks might have been accidentally produced. 1. By the forcible pressure produced by the child's head during labour, an explanation which is highly improbable, if respiration has been performed—although a child has been known to breathe in breech-presentations, while the head was still in the vagina. 2. They will be more commonly referred to a violent attempt made by a woman at self-delivery, during a paroxysm of pain. This explanation is admissible, so long as it is confined to injuries which, by any reasonable construction, might be received during labour; but supposing the marks to have been certainly produced after the complete birth of the body, it will not of course apply. The case of the *Queen* v. *Ancliffe* (Nottingham Lent Assizes, 1842) is in this respect worthy of attention; for it appears to me to show that a defence of this kind may be sometimes strained. The evidence proved that the prisoner was delivered of a child, under much suffering, on a stone floor, and in the presence of another woman—a witness. The child was born alive, and was heard to cry several times. The witness left it in charge of its mother, and on returning shortly afterwards, she found it dead with black marks upon its throat. The female midwife, who separated the child from the mother, deposed that it gave a sort of half-cry: she thought it was dead when she first saw it, and the marks on the neck were not more than a woman might have caused in attempting to deliver herself. The medical evidence proved that there were many ecchymosed marks about the throat of the child, as well as on the right side of the neck, and blood was effused beneath them. The marks might have been produced by the fingers; death had been caused by pressure on the windpipe. The judge left it to the jury to say whether the marks of violence might not have been unconsciously inflicted by the prisoner herself during labour. The jury returned a verdict of 'not guilty.' (See also a case by Bellot, 'Ann. d'Hyg.' 1832, 2, 205.) Prof. Skrzeczka has reported two cases of some interest in which effusions of blood were found beneath the muscles of the neck of new-born children. Such an appearance might induce a medical witness to affirm that great violence had been applied to the neck with criminal intention. The fact is, however, they may be often owing to the efforts made by the woman in self-delivery. (Horn's 'Vierteljahrs.' 1869, 1, 129; 'Ann. d'Hyg.' 1870, 2, 231.)

It is obvious from numerous acquittals that a jury are ready to act upon any suggestions, however improbable, to account for marks of violence on the neck of a new-born child. In *Reg.* v. *Ashton* (Lewes Lent Assizes, 1858), it was proved by the medical evidence that the child was found dead in the soil of a privy with a piece of riband tied tightly round the neck, the mark of a bruise on the head, two deep cuts in the throat, and about seventeen punctured wounds on the body, of which one had penetrated the heart. The medical witness stated he had no doubt the child was born alive, and that these injuries were the cause of death. The counsel for the defence suggested that there was no proof of existence after entire birth of the body, and the injuries found on the child were 'very probably the result of accident in the course of self-delivery by an unhappy young creature like the prisoner!' The jury accepted this lenient but inconsistent view of the medical facts, and acquitted

her of the murder. In *Reg.* v. *Parkinson* (Liverpool Lent Assizes, 1859), some suspicious marks on the neck of a child were referred to the accidental tightening of the string of a cap. The cases of *Reg.* v. *Money* (Norfolk Summer Assizes, 1858), and *Reg.* v. *Grady* (Liverpool Lent Assizes, 1858), furnish additional illustrations of the impunity with which new-born children may be destroyed by strangulation.

Among marks simulating violence, which are sometimes found on the necks of new-born children, Mr. Harvey has pointed out one of a singular kind. In February 1846 he was present at a delivery in which a child was expelled rather suddenly; and after making two or three convulsive gasps, it died. Whilst endeavouring to restore animation, he observed a bright-red mark extending completely across the upper and forepart of the neck, from one angle of the lower jaw to the other, as though it had been produced by strangulation with a cord, except that the mark was not continued round to the back of the neck. It was of a vivid red colour, and not like a bruise or ecchymosis: it had very much the appearance of a recent excoriation. It was most clearly defined in front, where it was about a quarter of an inch in breadth, and it became diffused at the sides. The face was not swollen, and there was no fulness of the veins. ('Med. Gaz.' vol. 39, p. 379.) A distinction in this instance might have been based upon the colour of the mark—the unabraded state of the cuticle, and the absence of congestion of the face and venous system. Nevertheless, the case is of some importance, and the facts should be borne in mind during the examination of the body of a new-born child alleged to have been strangled. Another case, which was the subject of a coroner's inquest, was published by Mr. Rose in the same journal (vol. 37, p. 530), in which red marks on each side of the nose of a new-born child were mistaken for the effects of violence applied to the nostrils during a supposed attempt at suffocation. Mr. Rose examined them closely, and considered that they were nævi (mother's marks), and had nothing to do with the death of the infant.

Constriction before or after death—before or after respiration.—A medical witness is sometimes asked on these occasions, whether he will undertake to swear that the ligature or the fingers had been applied to the neck of a child before or after its death, or before or after it had breathed. It is proper to observe that, so far as external marks of strangulation are concerned, there is no difference in the appearances, whether the constriction takes place during life, or immediately after death, while the body is warm. Casper's experiments render it highly probable that when a constricting force is applied to the neck of a dead child, at any time *within an hour* after death, the marks cannot with certainty be distinguished by any appearance from those made on a living body. ('Wochenschrift,' Jan. 1837; see also p. 63, *ante*.) With regard to the second point, it may be stated, that whether the child has breathed or not, provided it is *living* and the blood circulating, marks of violence on the neck will present precisely the same characters. The following instance is related by Casper:—The body of a new-born child was found concealed in a cellar, and the mother was charged with having murdered it. She confessed that she had heard the child cry at the birth, but that it soon died. In about *an hour* afterwards, she tied tightly round its neck a band made of a few straws, which she hastily twisted together, in order, as she alleged, 'to prevent it from awaking.' On the fifth day the body was examined: the child was mature, well formed, and had evidently breathed. The examiners referred death to strangulation; the woman was convicted, and sentenced to be imprisoned for life. An appeal was made against this sentence, and Casper's opinion was called for on the propriety of the medical inference of strangulation during life, from the mark found on the neck. The witnesses had stated 'that each *straw in the* band had produced a well-defined depression, which was whiter

than the surrounding skin, while the little folds or elevations between the straws were red; and on cutting into these reddened portions, a slight effusion of blood was found beneath.' Casper gave his opinion, that this effusion (ecchymosis) might have resulted from the application of the straw-band soon after death while the body was warm; and the circumstantial evidence allowed that the ligature might have been applied at any time within an hour after death. Hence he declared that there was a want of proof that this child had died from strangulation. In consequence of this opinion the punishment was mitigated. It is impossible to deny the correctness of the inference drawn by Casper, since the mark was undoubtedly such that it might have been produced either before or recently after death, while the body was warm. Which of these two suppositions was the more probable, and whether it was more likely that a ligature should be put round a child's neck an hour *after* death to prevent it from awaking (?), or *before* death for the alleged purpose of destroying it, it was of course for a jury and not for a medical witness to decide. If there was nothing more in the prisoner's favour than her own statement as to the time when she applied the ligature, and her object in applying it, it is certain that a very humane interpretation was put on the facts. If the Court believed Casper's opinion to be correct, the woman should have been altogether acquitted, instead of having the punishment merely commuted. It can be no crime, however absurd and unaccountable it may appear, for a person to place a ligature round the neck of a child after death, so as to produce the appearances of strangulation.

When such an extraordinary plea as this is raised, it is a fair matter for a jury to consider the motives of human conduct, and to judge of such a defence on the principles of common-sense. If carried too far, no one who was not seen by others to perpetrate the act, could be convicted of homicidal strangulation. In the case of *Reg.* v. *Wren* (tried at the Winchester Lent Assizes, 1840) the medical evidence went to show that the child had breathed, and was born alive. There was a piece of tape tied round its neck very tightly, and fastened behind, and there was a discolouration of the skin beneath; the tongue was livid and swollen, and blood was effused beneath the scalp. The medical witness admitted that the mark on the neck might have been produced after death; and as he could not therefore positively say that the child had been destroyed by strangulation, the prisoner was acquitted. (See also *Reg.* v. *Hyland*, Cent. Crim. Court, Aug. 1844.) In *Reg.* v. *Green* (C. C. C. Feb. 1860) the body of the child was found with a riband round its neck, so tightly applied that the parts on each side were swollen. Death was referred to strangulation, but it was suggested in the defence that the riband-ligature might have been placed there as an ornament or as part of the dress; and as the post-mortem examination of the body was not made until forty-eight hours after death, it was assumed that the tightening of the ligature was only apparent, and the result of a swelling of the parts after death! The jury acquitted the prisoner. In a similar case, tried at the Central Criminal Court in April 1865 (*Reg.* v. *Morgan*) a string such as is used for securing parcels was tied very tightly round the child's neck. The lips were swollen, the face was puffy, the tongue protruded, and there was a deep indentation round the neck in the course of the ligature. The lungs were found to be fully distended with air, so as to leave no doubt that the child had been born living, and had been destroyed by strangulation. The suggestion in the defence was, that the woman had employed the ligature for the purpose of assisting her delivery. The late Mr. Justice Shee, in charging the jury, said they 'must be satisfied that the child had died from strangulation, that the prisoner strangled it intending to destroy it, and that the child lived, after it was entirely detached from the person of its mother except by the umbilical cord. There was no doubt the child had died

from strangulation, and that the ligature was put round its neck by the prisoner. If, however, she tied it to assist the birth, and in so doing unintentionally destroyed the life of the child, she was not guilty on the capital charge; but if she tied it with the intention of destroying it, or if she tied it after the child was fully detached (except by the umbilical cord) with that intention, then she was guilty of murder.' Dr. Lankester speaks of a case, within his own knowledge, where a child was found strangled with a stocking tied tightly round its throat. The woman who was charged with the murder was acquitted on the ground that she might have tied the stocking round the neck of the child in order to assist her in delivering herself. ('Second Annual Report,' 1865.) That such a defence is too easily admitted and is wholly inconsistent with the facts, is proved by another case (*Reg.* v. *Baker*, C. C. C. Aug. 1866). The medical man who examined the dead body of the child gave the following account of the appearances:—The tongue was swollen, and, with the eyes, protruded, and a tape was passed *three times* round the neck. It had been passed once round and *double-knotted*, and then passed round twice and again double-knotted on the left side of the neck. On removing the ligature there was a deep indentation in the neck and much discolouration. The results of further examination convinced him the child had been born alive, and that it had died from strangulation. In cross-examination he said he could not say whether the child was completely separated from the mother when the strangulation took place.

Counsel for the defence adopting the answer thus elicited from the surgeon in cross-examination, asked what evidence there was on which the jury could come to the conclusion, either in point of fact or of law, that a murder had been committed at all! There was no doubt, he said, the child had died of strangulation produced by the ligature found round the neck; but he argued that the strangulation had been caused in the efforts of the mother to deliver herself when she was in all the agonies and throes of parturition, the ligature having been resorted to by her to aid the delivery. The woman was acquitted of the charge. If this mode of aiding delivery were generally adopted, but few children would be born living. Such a mode of dealing with a child at birth, should be treated at least as manslaughter if the intention to kill is not proved.

Constriction before or after entire birth.—Judging from what has occurred on several recent trials a medical witness must prepare himself for another and a still more difficult question. Let us suppose it to be admitted that the ligature was applied to the neck of a child while it was living, and after it had breathed; it may be inquired whether it was applied before or after the *legal* birth of the child, or, as some judges have laid down the rule, before or after an independent circulation has been established in the child's body. In the case of *Rex* v. *Enoch*, it was held 'that there must be an independent circulation in the child before it can be accounted alive.' (Archbold, p. 367.) By an 'independent circulation' we can only understand that condition in which breathing is established, and blood no longer passes from the mother to the child. Thus, this state would be proved by a cessation of pulsation in the cord, and the crying or audible respiration of the child. It will be seen that this is tantamount to insisting upon absolute proof of respiration, as evidence of life; and therefore entirely conflicts with the opinions of other judges, who have held that proof of respiration is not necessary on a charge of murder, because a child might be born alive and not breathe for some time after its birth. (*Rex* v. *Brain*, Archbold, p. 367.) On the other hand, if the presence of an independent circulation be the test of a child being legally alive at the time of the violence, the entire birth of its body is certainly not necessary for this; because, as it is well known, respiration may be established, and consequently

an independent circulation acquired, before the body of the child is *entirely born*. Here, again, this judgment is opposed to the opinions of those judges who have repeatedly held that, whether a child has breathed or not, entire live-birth must be proved. One of the most common judicial objections to the hydrostatic test is, that a child may breathe, *i.e.* substantially acquire an independent circulation, but die *before its body is born*. In this state of uncertainty, it is difficult to say *what* medical evidence is required to prove. If an independent circulation alone in the child is sufficient, it cannot be always necessary to prove the entire birth of the body; but if proof of entire live-birth be sufficient, then it cannot be always necessary to show that the child had acquired an independent circulation when violence was offered to it!

In cases of tenancy by courtesy, it has been held that the quivering or spasmodic movement of a lip after birth, without respiration, independent circulation, or any other sign of vitality, was sufficient to show that a child was born alive, and that it had thereby acquired civil rights which it could transmit to others—its heirs. Why is the proof of an independent circulation in a child to be demanded of medical witnesses in a case involving a question of its murder, when such a proof is not called for in respect to its acquisition of civil rights? If the question were fairly considered by all the judges, probably proof of an independent circulation in this sense would not be required; at any rate, it could not be consistently demanded, in the face of other decisions, that proof of respiration was not absolutely necessary to constitute live-birth in law, even in cases of child-murder. Among cases in which this question has been raised, one occurred on the Oxford Spring Circuit, 1841 (*Reg.* v. *Wright*). The child was found concealed in a garden; its throat was completely cut, and there was a stab under the left arm. Gurney, B., is reported to have stopped the case, because there was no proof that the child had had 'an independent existence' when the wounds were inflicted. It is worthy of remark that one form of murder may be the actual prevention of the establishment of an independent circulation or existence in the child, as where the navel-string is designedly tied before the commencement of the respiratory process. It has been suggested that ignorance of this point among midwives may be a cause of numerous still-births. In the meantime one fact is obvious, that whether the means of strangulation, if that be the form of murder, be applied to the neck of a living child before the entire birth of its body or afterwards, before the establishment of an independent circulation (*i.e.* the act of respiration) or afterwards,—the appearances will be the same; and from these it will be impossible to say at which particular period the strangulation was accomplished.

Constriction before or after severance of the navel-string.—There is still another novel form which this question has taken. The witness may perhaps be asked whether the strangulation occurred before or after the navel-string was severed. It would appear that the severance of the cord has been sometimes regarded in law as a test of an independent circulation being established in the child; but this is obviously an error, depending on the want of proper information respecting the phenomena which accompany birth. Respiration, and therefore an independent circulation, may exist *before* the cord is divided; and its severance, which is never likely to take place until after entire birth, cannot consequently be considered as a boundary between a child which is really born alive, and one which is born dead. A premature severance, as it was just now stated, might positively endanger the life of a child, instead of giving it an independent existence. A healthy and vigorous child may continue to live, and breathe independently of the mother, before the division of the cord, and the time at which the severance is made depends on mere accident. Hence the marks of strangulation on the neck of a living and breathing

child must be the same whether the cord be divided or not. The entire birth of the body is now considered to be complete, although the navel-string is not divided. This question was raised in the case of *Reg.* v. *Morgan* (C. C. C., April 1865, see p. 423), and so decided by Mr. Justice Shee. In *Reg.* v. *Raven*, however (Warwick Lent Assizes, 1865), a different view appears to have been taken by the learned judge, Baron Martin. It was proved that the child was born alive, was placed on the bed, and cried for five or ten minutes. Fracture of the skull was the cause of death, and, according to the statement of the mother, the injury was inflicted after the child was born, but *before* the umbilical cord was severed. The learned judge directed the jury that, if they believed the injuries were inflicted at that time, and that the child died, after the cord was severed, from the injuries previously received, that would be murder or manslaughter according to the circumstances. The jury acquitted the prisoner. It remains doubtful, from this ruling, whether, had the child died before the cord was severed, although it had an existence independent of its mother, the killing would have been a crime.

The following cases will illustrate the difficulties which a witness may have to encounter when it is alleged that a new-born child has been destroyed by strangulation. In *Rex* v. *Crutchley* (Monmouth Lent Assizes, 1837), the body of a child was discovered by a medical man (one of the witnesses) under the bed of the prisoner, who had been secretly delivered. There was a riband tied in a knot so tightly round its neck as to have prevented respiration. The child had evidently been dead some hours, and the prisoner alleged that it was born dead. On inspection, the face was found swollen and the lips were livid; the lungs contained air, and were of a florid colour; they were crepitant and floated on water, so as to leave no doubt that the child had breathed. The vessels of the brain were gorged; the other viscera were perfectly healthy. The medical witness attributed death to strangulation: he thought that the ligature had been placed round the neck before the umbilical cord, which had not been tied, was severed; but the reason for this opinion is not stated. He considered that the child had been born *wholly* alive, but admitted that the ligature would have produced the same appearance on the neck had it been applied before the complete birth of the child. Another witness, however, stated that he thought the ligature might have been placed round the neck before the entire body of the child was born. The defence was, that the ligature had been used by the woman for the purpose of assisting herself in the labour; and the medical evidence allowed, whether this was the motive or not, that it had been applied before the child was actually born. The judge directed the jury to consider whether the prisoner wilfully killed the child; if so, whether the killing occurred before or after the entire birth of its body; and lastly, whether the killing took place while it was still attached to the body of its mother. Unless the child was destroyed after entire birth, the prisoner would be entitled to an acquittal: if destroyed while still attached to the body of its mother, the point would be reserved for the consideration of the judges. The prisoner was acquitted. There can be no doubt that, provided a child be born entirely in a living state, the destruction of it would be murder, whether the navel-string was severed or not.

In the case of *Reg.* v. *Byron* (Chester Aut. Ass. 1838), the dead body of a child was found with a rag tied round its neck, which, in the opinion of a medical witness, had caused death by strangulation; but, on being questioned by the judge, he admitted that the appearances might be explained by supposing that the prisoner had applied the rag and produced them in attempting to deliver herself. In *Reg.* v. *Millgate* (Central Criminal Court, Nov. 1842) a child was discovered dead, and on examination the face was livid, the tongue *protruded*, and the hands were clenched. On the neck was a ligature which

had been passed round it four times, and was tied tightly. The vessels of the brain were congested, the lungs were partially inflated, and the general appearance of the body was healthy. The medical witness thought that the child had been born alive, and had died from the effects of the ligature on the neck. The judge directed the jury that they must be satisfied that the child was completely born at the time the ligature was placed round the neck. The prisoner was acquitted. In another case, *Reg.* v. *Webster* (Worcester Lent Ass. 1839), the following facts were deposed to by the surgeon:—The child was full-grown, and was born alive; this was inferred from the lungs being completely inflated. A ligature was found on the neck; it had been passed round twice, was very tight, and fastened in a knot: it had caused two deep indentations. The vessels of the scalp and brain were distended with blood, but there were no marks of external violence. Death was caused by strangulation. The judge left it to the jury to say whether they were satisfied that the child was wholly born into the world alive; and, if so, whether the prisoner had knowingly and wilfully destroyed it after it was born. The prisoner was acquitted. The following case, which occurred to Dr. Massey, of Nottingham, is reported in the 'Lancet' (Nov. 9, 1867, p. 576). The child was mature; the umbilical cord had not been tied; it was torn and jagged at the end. There was a bloody discharge from the mouth and nostrils. The mouth was open; the tongue protruded between the lips. There was general lividity of the head and face. On the lower part of the neck there was a well-defined circular mark or indentation about two lines in breadth. This mark corresponded to a stay-lace, with which the bundle containing the dead body of the child was tied. The skin in the indented part was thin, semi-transparent and parchment-like. There were linear impressions of the threads of the tape to be seen on it. There was no extravasation of blood. The lungs filled the chest; they were of a bright-red colour; they weighed twelve drachms. They floated on water entire, as well as when divided into small pieces; and they floated when the divided portions were compressed. They crepitated on cutting, and when the cut portions were squeezed, frothy blood escaped. The cavities of the heart contained dark blood, and the whole nervous system was gorged. In the opinion of the medical witness these facts established: 1, that the child was born alive; 2, that it died from strangulation; 3, that the mark on the neck was not produced by the navel-string, but by some ligature intentionally applied. There can be no doubt that in this case full and perfect respiration and an independent circulation in the child were proved. All this was admitted, but the question at the trial was whether the ligature was applied to the neck before or after the entire birth of the child. This did not admit of a positive answer, and the prisoner was acquitted of the charge of murder.

Constriction without ecchymosis.—It may be an important question whether, in these instances, the absence of any mark or discolouration of the skin by a ligature, should be taken as evidence of the means of constriction not having been applied during life. What we are entitled to say from observed facts is, that ecchymosis from the ligature is not a necessary consequence of constriction, either in a living or a dead child: although we might expect that there would be few cases of child-murder in which, when strangulation was resorted to, there would not be some ecchymosed mark or discolouration, chiefly on the presumption that great and unnecessary force is suddenly applied. Besides, it is not improbable that a slighter force would cause ecchymosis on the skin of a new-born infant than would be required to produce such an effect on that of an adult. When there is no mark from a ligature, an attempt may be made to show that death could not have been caused by strangulation, as in the following case (*Reg.* v. *Hagg*), which was tried at the Carlisle Summer Assizes

in 1841. The medical evidence was to this effect:—The deceased child was discovered with a tape tied tightly round its neck. It was full-grown and healthy, and had been born alive, as respiration had been fully established. The lungs filled the chest, floated on water, and crepitated when pressed. From the livid appearance of the face and neck, the congested state of the brain, and an effusion of blood on the surface, combined with the ligature round the neck, the witnesses were of opinion that the child had died from strangulation. On cross-examination, they said that a child may breathe when partially born. The floating of the lungs in water is of itself an uncertain test, if the body is at all decomposed. With other tests it affords a proof of a child having been born alive. One witness said the ligature had produced no mark of discolouration on the neck, while others said it was perceptible. The inference is that the mark could not have been very apparent, or there would have been no discrepancy on this point. It was ingeniously urged in the defence that the child could not have died from strangulation, because a tape tied so tightly round its neck as to cause death in this manner, would necessarily leave a discolouration of which no person could have any doubt. The prisoners were convicted. Had the defence been, as in the former cases, that there was no proof whether the ligature had been applied before or after entire birth, or the establishment of an independent existence in the child, the result might have been different. From the cross-examination it will be seen how certain stock objections to the hydrostatic test, are ingeniously made to affect medical evidence. An answer to a *general* question is rendered applicable to a *particular* case. A witness admits on a trial that the lungs may float from putrefaction or artificial inflation—in short, from any other causes than respiration. If this answer be not qualified, an impression is immediately conveyed to the Court, and not always removed by a re-examination, that some of these causes may have given rise to the floating of the lungs in this particular instance; when, in fact, there may not have been the least trace of putrefaction, nor the least ground for suspecting that artificial inflation had been practised. As contrasts to this case, see report of one which occurred to Mr. Coales (G. H. Rep. 1842); and another by Dr. Scott ('Ed. Med. and Surg. J.' vol 26, p. 62).

8. Poisoning.

This is placed among the probable means of perpetrating child-murder, but we rarely hear of *new-born* children being thus destroyed. The earliest age at which I have known a trial to take place for the murder of a child by poison was two months. (*Rex* v. *South*, Norf. Aut. Circ. 1834.) A quantity of arsenic was given to an infant, and it died in three hours and a quarter after the administration of the poison. At this age the case can scarcely be called one of infanticide in a medico-legal sense, because all that it would be necessary to prove would be the cause of death; the question of life or live-birth would not require to be entered into. If, in a case of child-murder, death from poison should be suspected, the poison must be sought for in the usual way. Some cases have occurred, in which children have been wilfully destroyed a week or two after birth, by the administration of opium or excessive doses of purgative medicine. M. Séverin Caussé refers to cases of this kind which have occurred in France. A woman was sentenced to eight years' imprisonment for the crime of poisoning her new-born child with concentrated sulphuric acid. In another case a woman was convicted of poisoning her infant with phosphorus scraped from lucifer matches. ('Ann. d'Hyg.' 1869, 2, 124.) There would be no difficulty in proving the presence of the poison under these circumstances. In some instances, it has been found on the napkins used for the child. (*Reg.* v. *North*, Guildford Summer Ass. 1846.)

In cases in which infants are destroyed by poison there is generally great difficulty in tracing the act of administration to the guilty person. The fluid food given to them renders the admixture of poison easy, and as many persons may have access to this food, it is often impossible to fix upon the criminal. In one instance which came to my knowledge, an illegitimate child had been placed out to nurse by its mother, a woman in good social position. It was noticed that after each visit paid by the mother the child was sick, and after repeated attacks of illness the child died. On inspection arsenic was found in the body, and this was beyond doubt the cause of death. There was no suspicion against the nurse; but a strong suspicion fell on the mother, from the circumstances above mentioned. There was evidence, however, that the child was not at any time fed by the mother when she visited it, and that the mother had no access to the child's food. No poison could be traced to her possession, and she was not seen by the nurse, who was present, to give anything to the infant. The only fact that transpired was that, at each visit, she took it in her arms, and was observed to rub its gums with her finger, and soon after her visit, sickness followed. There was reason to believe that she had concealed small quantities of arsenic under her finger-nails, and that she had thus administered the poison while rubbing the gums of the child!

Conclusions.—The following conclusions may be drawn from the preceding remarks:—

1. That congestion of the face and head in a new-born child, is not a proof of death from strangulation.
2. That strangulation can take place only in children which have breathed.
3. That a child may be strangled during birth by the accidental twisting of the navel-string round its neck.
4. That the navel-string may produce a livid or ecchymosed depression on the neck, like any other ligature.
5. The marks on the neck, arising from accidental causes, may resemble those which arise from strangulation.
6. That the effect of constriction on the neck, either by the navel-string or any other ligature, is the same if the child be *living*, whether it has or has not breathed.
7. That the effect is the same whether the child has been *partially* or *entirely* born.
8. That the effect of a ligature on the neck of a *living* child is the same whether the navel-string has or has not been severed.
9. That a new-born child may die from strangulation without this fact being necessarily indicated by ecchymosis on the neck. This depends on the nature of the ligature, and the amount of force used.

CHAPTER 84.

EXAMINATION OF A WOMAN CHARGED WITH CHILD-MURDER—MEDICAL RESPONSIBILITY—ACTIONS FOR DAMAGES—SUMMARY OF MEDICAL EVIDENCE ON TRIALS FOR CHILD-MURDER—VERDICTS OF JURIES—RECENT VERDICTS OF MANSLAUGHTER IN THESE CASES—DEATH OF THE CHILD AFTER BIRTH FROM INJURIES RECEIVED DURING DELIVERY.

Examination of women. Medical responsibility.—In general, it is the mother of the child who is charged with the murder, and in this case it may be necessary, in order to connect her with the child, to determine whether she has

or has not been recently delivered. Medical evidence may show that the date of delivery does or does not correspond with the date of the birth and death of the child. The usual appearances in cases of recent delivery both in the living and dead body, have been elsewhere fully described. (See DELIVERY, *ante*, p. 160.) These appearances necessarily vary according to the time at which the examination is made. M. Toulmouche has reported in detail several cases showing the post-mortem appearances met with at different dates. ('Ann. d'Hyg.' 1864, 2, 349.) Among other points, it will be necessary to examine the dimensions of the pelvis of the woman, since this examination may throw some light upon the truth of a defence as to rapid or protracted delivery. Unless an examination of the woman is made within twelve or fifteen days after delivery, no satisfactory evidence can in general be obtained.

If the reputed mother of the child is dead, a coroner or magistrate may issue an order for a post-mortem examination of the body, and the case will present no difficulty; if living, a serious question may arise as to medical responsibility. In general, a woman consents to be examined, but it may happen that she refuses to submit to a physical examination. An innocent woman is just as likely to refuse permission as one who is guilty; but, if circumstances point to one out of several women in a household, the refusal to permit an examination would of course be interpreted against her. It has happened on more than one occasion that medical men have assumed to themselves the right of enforcing an examination of a suspected woman, and, by threats or otherwise, have compelled her to undergo this. Such a course of conduct is in the highest degree indecent and improper; it is only when a woman willingly consents to be examined, that a medical man is justified in making an examination, and giving evidence thereon. It would, however, be proper in such a case to give her the warning which every magistrate and coroner is bound to give to any woman charged with murder, before requiring an answer to a question which may be used in evidence against her at the subsequent trial.

The case is widely different, however, when a medical man takes this authority upon himself, and compels a suspected woman, unwillingly, or under duress, to submit to a physical examination. By taking this illegal course, he is forcibly compelling a woman accused of murder, to produce positive proof of her guilt—such a course is entirely opposed to the spirit and practice of English jurisprudence. The mischievous results of such officiousness on the part of a medical man are well illustrated by the following cases. The first of them is noticed in the 'Lancet,' May 29, 1869. A surgeon and an inspector of police, at Hitchin, insisted upon examining two women, a mother and daughter, in order to determine whether either of them had been lately delivered of a child. This was against their consent, and in the absence of the husband and father. He brought an action against them, and recovered damages. ('Lancet,' Sept. 2, 1871, p. 333.) The other case was that of *Weir and Wife* v. *Hodgson* (Liverpool Winter Assizes, 1861). The dead body of a child had been found near the house of the plaintiff. The defendant, a surgeon, went with an inspector of police to see Mrs. Weir; and, having informed her that she was suspected of having had a child, told her that he had come to examine her by the authority of the law, and that she must submit. She refused at first, and proposed to send for a medical man whom she knew. In the end the defendant examined her, and there was no ground for the charge. The jury returned a verdict of 200*l.* damages for the assault. The police can give no legal power to a medical man to make such an examination in a suspected case, and the ultimate consent of the woman, if extorted by threats or intimidation, will be no answer to a charge of indecent assault.

In the former edition of this work, it was stated that a medical man might be justified, if, before proposing an examination, he obtained an order from a

magistrate or other official person; but, owing to some recent proceedings, the question here presents itself—Who is empowered to give legal authority to a medical man to examine a woman under such circumstances, if she refuses to undergo it voluntarily? Except on one recent occasion (August 1871), I am not aware that coroners and magistrates have claimed and exercised such an authority. It simply amounts to this—A woman lying under a charge of murder is compelled by the order of a coroner to produce evidence against herself! According to the best authorities on the office and duties of coroners, no such power as that hereby claimed is conferred either by custom or statute. It would be quite exceptional and repugnant to all the principles of British jurisprudence if such a power were conferred. Even in recent legislation on the Contagious Diseases Act, where statutory power is given to examine women suspected to be labouring under a loathsome disease, a woman cannot be forced against her will to undergo a physical examination. The penal law goes no further than this: if she refuses, she may be sentenced to punishment.

In reference to the compulsory examination of women charged with child-murder, there is no statute which authorizes such a proceeding. Any coroner issuing such an order to a medical man would be acting *ultra vires*, and any medical man obeying it, might render himself liable to heavy damages for an indecent assault, as in the case of *Weir and Wife* v. *Hodgson*.

In August 1871 a case occurred near Leominster, which has placed the question of medical responsibility in cases of alleged infanticide in a painful light. A young lady, the sister of a clergyman, committed suicide rather than submit to a physical examination by two medical men under the order of a coroner. The coroner held an inquest on the body of a child in a case of alleged infanticide. A suspicion arose that this young lady had been recently delivered. Two medical gentlemen, armed with a written order from the coroner, went to the rectory where she was residing, and requested an interview with her for the purpose of ascertaining whether she had recently had a child. She refused to see them, and subsequently destroyed herself. All the particulars of this tragedy have not been made known, but the attempt to examine this young woman for the purpose of obtaining evidence against her on a charge of child-murder appears to have had such an effect on her mind as to lead to suicide. The fragmentary particulars of this sad case will be found in the 'Lancet' for 1871, 2, pp. 333, 474, and 477. The medical gentlemen, in endeavouring to justify themselves for the part which they took in the matter, relied upon the written order of a coroner, but they have not published the order. The editor of the 'Lancet,' in commenting on this case, says truly enough, that no coroner, even of 'twenty-eight years' standing,' can order the performance of an illegal act, and should he do so, refusal to obey it is clearly justifiable. In the interests of the medical profession, and as a guide in future cases of this kind, he procured a legal opinion on the subject, which is here subjoined:—

'After diligent search on the subject of a Coroner's authority, I entertain no doubt that an order for the physical examination of a woman, in a case of suspected infanticide and concealment of birth, is grossly illegal. Such a method of obtaining evidence is completely at variance with our principles of justice; and I can find no authority for it anywhere.

'The practice of searching persons in custody is simply a police regulation for purposes of safety, to prevent suicide, and for the discovery of stolen property, and has no analogy to searching a woman's person in order to obtain evidence of concealment of birth.

'The coroner issuing such an order, and the medical man acting under it, would alike be liable to heavy damages in an action; and every surgeon acting under the orders of the police, or any other authority, is bound to see that the order is not in excess of their jurisdiction.

'Whether any, and if so what, change in the law on the present subject is desirable, is a matter not now in debate; but the question, whenever opened, will prove to be a very wide one.' ('Lancet,' 1871, 2, 477.)

This appears to be not merely a legal, but a plain common-sense view of the question at issue. No decision on this question may have been hitherto made by the judges, but if they denounce in the severest language the conduct of the police or of medical men in putting questions to and extracting criminatory answers from a woman charged with child-murder, they are not likely to spare a coroner who obtains from a woman by force and intimidation evidence of her criminality by a compulsory physical examination! If there is no judicial decision to be found relevant to this claim to extract evidence by force, it is because no coroner has hitherto ventured to exercise this arbitrary power over a woman charged with a capital crime. In the meantime, members of the profession should remember that an illegal claim made by a coroner will not exonerate them from the responsibility for an assault. In the above-mentioned case, the medical men appeared to have considered that the coroner had power to issue such an order under the Medical Witness's Act (6 & 7 Will. IV., c. 89), but had they referred to the Act, they would have seen that this only empowers a coroner to make an order for the examination of a dead body. It refers to the examination of the dead child, and not of a living woman. ('Sewell on Coroners,' p. 64 *et seq.*)

These remarks apply equally to the examination of women in cases of abortion and concealment of birth.

Summary. Frequent acquittals in spite of medical evidence of criminality.—From the foregoing considerations it will be seen, that the two great points to be established by medical evidence in a case of child-murder are: 1st, that a child was *entirely born living* when the alleged violence was applied to it; and 2ndly, that its death was due *to that violence and to no other cause whatsoever.* The leniency with which these cases are regarded by the law, and the extreme rigour with which medical evidence of *live-birth* as well as of the *cause of death* is treated, must show that they who consider that the use of the hydrostatic test can ever lead to the conviction of an innocent woman, have taken a very limited and incorrect view of the subject. The question of murder rests here, as in all other cases, upon clear and undoubted proof of the cause of death; and, more than this, it must be shown that the violence was *criminal*, and not by any reasonable construction accidental. Then it should be proved that this violence, if criminal, had been applied to the body of a child at a particular period—*i.e.* after entire birth; a condition which, from what has been already stated, can rarely admit of conclusive medical proof. If strangulation, for example, be rendered probable from the facts, the woman cannot be convicted unless proof is afforded—1st, that the child was wilfully strangled after its entire body was born; and 2ndly, that she could not possibly have produced the marks of strangulation in her convulsive or half-conscious attempts at self-delivery. Medical evidence can rarely be in a condition to establish with absolute certainty either of these points, and the assumption will therefore be, as in the numerous cases already reported, in favour of the accused person.

A serious question will probably here suggest itself, from the number of *impossible* medical proofs, so to term them, which the law requires in these cases, namely—How can a conviction for child-murder ever take place when there are no eye-witnesses to the crime? The answer is, that these difficulties may not be raised in the prisoner's favour; but this of course is a matter of accident. On most charges of infanticide, if the counsel for the defence insisted upon distinct medical proof of the child having been *entirely born alive* when the *violence was offered* to it; or that respiration, if clearly established by evidence,

took place, not during labour, but after complete birth, or after the child had acquired an independent circulation—neither of these proofs could be afforded, and the case, so far as medical evidence was concerned, would fall to the ground. That this is not an exaggerated view of the subject, will be evident from the following case, tried at the Lancaster Lent Assizes of 1846 (*Reg.* v. *Hacking*). A female servant who had attempted to conceal her pregnancy was charged with the murder of her infant child. It was ascertained that she had been delivered of a child, and the medical evidence was to the effect that its throat had been cut with some thin-bladed sharp instrument—*a portion of the gullet and windpipe having been cut away.* The prisoner stated that the child was born dead, and confessed that she had, as she believed, cut its throat with a penknife, which she had afterwards wiped and put away. The weapon was found in her pocket. The medical witness deposed that the child had certainly *breathed*, and he was inclined to think that it had been *born alive.* He admitted that a child might breathe when partially born, and die before it was wholly born; also that the appearance of the wound, whether inflicted before or immediately after death, would be similar; and it was impossible, from the examination, to say whether the child had been partially or wholly born at the time of its infliction. The counsel for the prisoner contended that no evidence had been adduced which could satisfy the jury that the child had been *fully born alive*—a circumstance without which the charge must fall to the ground. The jury acquitted the prisoner on the charge of murder. ('Med. Gaz.' vol. 37, p. 382.) In examining this case, it may be observed that such a wound with a penknife was hardly likely to be inflicted on the child by any accident, or for the purpose of aiding delivery. As the child had breathed, it is absurd to suppose that the woman waited until it had died from some other cause, of which there was no appearance; and that after death, without any conceivable motive, she had cut out a portion of its throat. So far as the report goes, the acquittal appears to have depended on the assumption that the child was destroyed before it was wholly born; and although it had breathed, there was a want of evidence to show that this breathing had continued after its body was entirely in the world. (See also a case in the same volume, p. 1007; and 'Prov. Med. Jour.' April 2, 1851, p. 182.) In another case, *Reg.* v. *Burns* (Cent. Crim. Court, March 1863), the learned judge made the following remarks, in addressing the jury:—'Before finding the prisoner guilty, they must be satisfied that the child was completely born into the world, and had had an existence independently of the mother. If they were not convinced of this, there would be an end of the inquiry, because a child not completely born could not be made the subject of an indictment for murder. Again, supposing the child to have been fully born alive, they would then have to consider whether its death had resulted from any deliberate and wilful act on the part of the mother.'

The frequent acquittals which take place on charges of child-murder, in spite of strong evidence of criminality, most probably depend on the fact, that there are many extenuating circumstances in a prisoner's favour which the law does not recognize. She may be young, unfortunate, friendless, and perhaps tempted by a seducer, or by utter destitution, to the perpetration of the crime. Hitherto juries have had no alternative but to convict the woman of murder, or to find her guilty of the misdemeanour of concealment of birth. Whatever doubt may be thrown on a case by the forms of law and the rules of evidence, there can be no doubt *medically* that living children are frequently destroyed at birth, and that the criminal law, from the peculiar nature and stringency of the proofs required to establish guilt, has hitherto failed to reach the perpetrators. Dr. Lankester, in his Second Annual Report as Coroner (1865), states that he held inquests in sixty-nine cases of new-born children, and in fifty-six of these the coroner's juries returned verdicts of 'wilful mur-

der.' In every instance with which he was acquainted the persons charged had been acquitted of the crime, against evidence of the most obvious and convincing kind. The fact is, he observes, 'the prosecutor, judge, and jury are all anxious to avoid a verdict which consigns to death a woman who, in nine cases out of ten, has been more sinned against than sinning.' This, he remarks, will probably be the case so long as the law inflicts, or threatens to inflict, death for infant-murder.

In many of these cases the punishment of death would be as much too severe, as the punishment of two years' imprisonment for 'concealed birth' is too slight: and with a full contemplation of this difficulty, the Civil Code of France (Art. 319) wisely permits the Court, on proof of extenuating circumstances, to mitigate the punishment. Some such provision is required in our law; and the unnecessary perplexities which are now thrown on medical evidence, as well as the conflicting opinions on what is live-birth and what is not, would then disappear. A change of this kind might undoubtedly be made without prejudice to the accused, or interference with the course of justice. A writer in the 'Legal Examiner' (Sept. 11, 1852, p. 555) has suggested that a special Act of Parliament should be passed to render proof of 'entire birth' unnecessary, and that there should be, at the same time, some mitigation of the punishment. A modification of this kind appears to be necessary, unless we are prepared to admit that the destruction of a living and breathing child *during* the act of birth is not a crime. It is a curious fact that while the law protects a child both before and after its birth, it allows it to be put to death with impunity during the process of birth. In addressing the Grand Jury on this subject at the Central Criminal Court, in April 1865, the Recorder observed that—'for several months past many cases of child-murder had been brought to trial. If one were to judge by the verdicts of coroners' inquests, it would appear as if the crime of the wilful destruction of illegitimate children was very much upon the increase; but if one were to judge by the verdicts returned in that Court, it would appear as if it was one which never took place, because, after a long experience, he did not recollect a single instance in which a verdict of wilful murder for it had been given by the juries there! That was not the place to comment upon the law; still, it was impossible not to see that either there must be some fault in the law, or in the administration of it, there being so many charged with the capital offence, and no one being found guilty of it. There was no doubt it was a very difficult crime to establish, because there were always certain technicalities to be made clear; and in the absence of that clearness, although no moral doubt of the truth of the charge might exist, yet the verdict for the capital offence could not be returned.' This subject, in its social aspects, has been considered by Dr. Lankester in his 'Annual Reports of Coroners' Inquests for Central Middlesex,' and by Mr. Greaves, of Manchester ('Observations on Infanticide,' 1863).

Verdicts of manslaughter in cases of infanticide.—It is a question whether a verdict of manslaughter might not be proper on many of these occasions; for to say that the whole offence consists in concealing the birth of a still-born child, is virtually to disbelieve and reject the clear and satisfactory medical evidence often adduced. In *Reg.* v. *Tommey* (Warwick Lent Assizes, 1854), tried before Coleridge, J., in which a medical witness declined to say positively that a child was born alive and had breathed after birth, the jury convicted the prisoner of manslaughter. Respiration had been established, but it was admitted by the witness that this might have occurred during birth or afterwards. There was a cut on the right side of the neck of the child, and a circular wound in the windpipe. The jury considered, notwithstanding the implied medical doubt, that the child had really come into the world alive. At the same time, they appear to have thought that the wounds on the

neck were caused during attempts at self-delivery, and had not been inflicted with the intention of murdering the child.

Since the former edition of this work was published, this view has been adopted and carried out by some of our judges, more particularly by the late Mr. Justice Willes and Mr. Justice Brett.

In a case tried at the Winchester Summer Assizes, July 1871, before Mr. Justice Brett, a woman was indicted for the wilful murder of her newly-born child under highly suspicious circumstances. The jury returned the usual verdict of 'concealment of birth.' The learned judge, in sentencing her to fifteen months' imprisonment, said she had escaped from the charge of murder by the indulgence of the law, and from that of manslaughter by the too indulgent verdict of the jury. In another case tried by the same learned judge at the Devon Lammas Assizes, 1871 (*Reg.* v. *Maynard*), the medical evidence showed that the child was newly-born and quite mature. Its head had been removed from the body, and the right leg had been cut off above the knee. On the neck, behind the shoulder, there was a bruise on the skin of a dark blue colour, about three inches in diameter. The umbilical cord had been torn or cut at about seven inches from the body. There were slight superficial wounds on the back of the neck and other parts of the body, which was generally pale. The lungs contained air, and readily floated, even when cut into many pieces. Air escaped by pressure under water, and they still floated.

From these facts the medical witness stated that the child had been born alive, and had died from hæmorrhage. The prisoner had made a statement to the effect that the child was born alive. The learned judge, in summing up the case, instead of taking the usual course, *i.e.* of leaving the jury to decide between 'murder' and 'concealment of birth,' impressed upon them strongly that, if not guilty of murder, they must consider whether the prisoner was not guilty of manslaughter. She was guilty of murder if, after the child was born alive, she by any act of hers caused its death, intending to kill it. She was guilty of manslaughter if, after the child was born alive, she committed an act of *culpable negligence*, by which the death of the child was caused, or by which the child was not permitted to live, when it otherwise would have lived. The jury returned a verdict of manslaughter, and in sentencing the prisoner the judge is reported to have said, 'It seems to me that this is a very bad case of manslaughter. This is a crime which is rife throughout the country, and, from my experience daily, I cannot doubt that women have taken it into their minds—that is to say, bad women—to kill their children, rather than have the burden cast upon them of supporting them. For such offences they ought to be severely punished, and, notwithstanding the fact that the jury have recommended you to mercy—which I take it to be only an expression of their sorrow that a woman should be punished, but which sorrow and which feeling have led, in my opinion, in a great measure to the multiplication of this crime—it seems to me quite time to harden one's self against such a feeling. I may feel it, but it is my duty to act, and I am bound to pass upon you a dreadful sentence. You will be sentenced to ten years' penal servitude.' In a still more recent case (*Reg.* v. *Sell*, Hereford Lent Assizes, 1873), before the same learned judge, the prisoner, a domestic servant, who was tried on a charge of child-murder, was found guilty of manslaughter, and sentenced to ten years' penal servitude.

In a case tried at the Cornwall Lammas Assizes, 1871, the late Mr. Justice Willes adopted the same course as Mr. Justice Brett (*Reg.* v. *Libbey*). The prisoner was a married woman, charged with the murder of her illegitimate child. The body was found mutilated, and partly burnt. The head, arms, and legs had been severed. Mr. Hudson, of Redruth, found that the lungs contained

air, and readily floated, entire and divided. They were of a red colour, and distinctly mottled. He concluded from his examination that the child was mature, that it had fully breathed, and from the retraction of the skin, that the cuts were made during life, or soon after death. There was no disease in the parts of the body examined to account for death.

It was proved that the woman had concealed the mutilated body of the child, and had tried to get rid of it by burning. She said the burnt bones found, and some blood on a rug, were those of a fowl. Mr. Hudson, however, proved that they were the bones of a child, and that the blood was not that of a fowl. With proper caution, he declined to say that the blood was human. The defence was simply, 'no proof of separate existence,' *i.e.* no proof that the child was 'born alive.' The jury returned a verdict of manslaughter, and the prisoner was sentenced to ten years' penal servitude.

The prisoner in this case had denied her pregnancy, had concealed her delivery, and had mutilated and partly burnt the body of the child. In addressing the grand jury, the learned judge thus expressed his views regarding the law as it is applicable to cases of infanticide:—'There was no doubt the question was, whether the case should be described as one of murder or manslaughter. Looking at the facts, as far as he could judge, the difficulty that presented itself most conspicuously was the difficulty in defining a complete birth. The state of the law on that point was extremely perplexing. If a woman could be proved to have been confined unassisted, with a view to take away the life of a child, it would be an act of murder; if, on the other hand, with no intention of killing the child, she was delivered, she undertook to do all without assistance that a careful and skilful person would do for her, and if she neglected this, she was guilty of manslaughter.'

There could be no reasonable doubt that in this, as in numerous other cases of murder with mutilation, the child was born alive. With the evidence of full and perfect breathing, there was nothing to render it probable that this child had died from natural causes during birth; and although there was no absolute proof of a separate existence, there was everything in favour of this view. It was, from the whole of the circumstances, far more probable that this child had been destroyed and mutilated while living *after birth*, than that it had been born dead, and its body mutilated and burnt merely for the sake of concealment.

These cases are striking examples that it is in the power of the law to inflict a severe punishment for this crime. The manslaughter theory will meet many of the difficulties in these cases; but so long as learned judges sum up the facts with no other alternative but murder or concealment of birth, juries will invariably fly to the more lenient verdict, even when all the proved facts of the case may point to wilful intention to destroy life, or the most culpable neglect or omission on the part of the woman to do what is necessary to save the life of her newly-born infant.

In cases in which the bodies of new-born infants show the signs of their having breathed and been recently living, and on which there are marks of violence by wounds or strangulation, or fractures of the skull, not explicable on the theory of accident, and such as would account for the death of a living child, it would not be straining the law too far to treat all such cases as cases of manslaughter. In the event of there being no marks of murderous violence on the body, and no evidence of a positive intention to kill or to allow to die, a conviction on the ground of concealment of birth or concealment of delivery would be sufficient. If the cases above related are compared with *Reg.* v. *Hacking* (p. 433, *ante*), it will be seen that the result depends greatly on the view taken by the learned judge who presides at the trial. If in these cases the women were justly convicted of manslaughter, a similar verdict would

have been justifiable in the case of *Hacking*, and of numerous other cases mentioned in this section.

Dr. Christison, in commenting upon the frequent acquittals on trials for infanticide in Scotland, as well as in England, and on the convictions only for a minor offence, which cannot always be proved, attributes it to a feeling, sometimes entertained in the present day, that the killing of a new-born child, when perpetrated under the impulse of injured honour or the fear of disgrace, should not be classed with the other varieties of murder. (See 'Edin. Med. and Surg. Jour.' vol. 26, p. 76.) There can, I think, be no doubt, that this is the true explanation of the numerous acquittals which take place. This subject has also attracted the notice of German medical jurists. According to Dr. Marnow, five out of six trials for child-murder end in an acquittal, although the Court can sentence those who are convicted to imprisonment for five or seven years, or longer, *i.e.* a verdict of guilty does not carry with it, as in England, capital punishment. In a well-marked case on which this physician reported, a woman was secretly delivered of a child. It was mature, well formed, with a capacity to live. The state of its lungs showed that it had breathed, and had therefore lived. There were marks like those of finger-nails and pressure on the neck, leading Dr. Marnow to the conclusion that the child had died a violent death. In spite of this evidence, and of suspicious conduct on the part of the woman, who had made two or three statements conflicting with each other, she was acquitted by the jury. As Dr. Marnow observes, the juries do not look backwards to a perpetrated crime, but forwards, to the effect of their verdicts of guilty or not guilty on the accused. (Horn's 'Vierteljahrsschrift,' 1866, 1, 146.)

Injuries during birth fatal after birth.—It may be mentioned, in concluding this subject, as the point has given rise to a trial for malapraxis, that if injuries should be criminally inflicted on a child during birth, and the child be born alive and afterwards die from the injuries so caused, the case would be murder or manslaughter, according to the circumstances. The following instance is reported by Chitty ('Med. Jour.' p. 416; also 'Archbold,' p. 345):—A man of the name of *Senior*, who, it appears, was an unlicensed medical practitioner, was tried in 1832 for the manslaughter of an infant, by injuries inflicted on it at its birth. The prisoner practised midwifery, and was called to attend the prosecutrix, who was taken in labour. The evidence showed that when the head of the child presented, the prisoner, by some mismanagement, fractured, and otherwise so injured the cranium, that it died immediately *after* it was born. It was argued, in defence, that as the child was not born (*in ventre sa mère*) at the time the wounds and injuries were inflicted, the prisoner could not be guilty of manslaughter. The judge, however, held that as the child was born *alive* and had died from the violence, the case might be one of manslaughter. This opinion was afterwards confirmed by the other judges, and the prisoner was convicted and sentenced to imprisonment. From the decision in this case, it will be seen that the law makes the question of criminality to depend upon the period at which the injuries prove *fatal*, and not upon the time at which they are inflicted on the body of a child; and had the prisoner effectually destroyed the child before it was entirely born, he would not have been guilty of any crime! The decision appears to depend on this principle of the criminal law, that the person killed must be a reasonable creature in being, and in the Queen's peace; therefore to kill a child in its mother's womb (or during birth) is no murder. (Archbold, p. 345.) The child, unless entirely born alive, does not come under the description above given. According to the words of one learned judge, it is not an 'inhabitant of this world,' although it is under these circumstances *medically* but not legally a living

child. Admitting the wisdom of adopting some fixed rule of this kind in a legal view, it is undoubtedly proper that the lives of children *during the act of birth* should be protected; at any rate, that their destruction should not be treated, as it now appears to be, with perfect impunity.

If a child is born alive, as a result of criminal abortion, and die, not from any violence applied to its body, but as an effect of its being immature, this will be sufficient to render the party causing the abortion indictable for murder.

[While this sheet was passing through the press (May 1873), a Bill to amend the law relating to infanticide was introduced into the House of Commons. I am informed that it proposes to enact, that 'if any person shall unlawfully and maliciously wound or inflict any grievous bodily harm upon any child, *during* or immediately after its birth, and shall thereby cause its death, he shall be guilty of felony, and on conviction thereof shall be liable, at the discretion of the Court, to be kept in penal servitude for any term not exceeding ten years, or to be imprisoned for any term not exceeding two years, with or without hard labour.' It will be seen by this proposed enactment that medical proof that a child was 'completely born alive' will be no longer necessary. The whole subject of infanticide in its legal bearings will most probably undergo revision.]

RAPE.

CHAPTER 85.

NATURE OF THE CRIME—SOURCES OF MEDICAL EVIDENCE—RAPE ON INFANTS AND CHILDREN—LEGAL COMPLETION—PROOFS OF PENETRATION—MARKS OF VIOLENCE—RUPTURE AND LACERATION—PURULENT DISCHARGES FROM THE VAGINA—EVIDENCE FROM GONORRHŒA AND SYPHILIS—RAPE ON GIRLS AFTER PUBERTY—DEFLORATION—SIGNS OF VIRGINITY—PROOFS OF INTERCOURSE.

Nature of the crime. Sources of medical evidence.—Rape is defined in law to be the carnal knowledge of a woman by force, and against her will. In ancient times it was punished by castration,—a punishment which, according to Dr. Griffiths, is retained in Virginia and Missouri, when the crime is perpetrated by a coloured man on a white woman, but not *vice versâ*. The Roman law, on which our ancient law was founded, was to this effect—'Rapta raptoris aut mortem aut indotatas nuptias optet, upon which there arose what was thought to be a doubtful case: 'Unâ nocte quidam duas rapuit: altera mortem optat, altera nuptias!' For a long period it was punished as a capital crime in this country, but penal servitude or imprisonment was substituted by the 24 and 25 Vic. s. 48. Under this section it is enacted that—'Whosoever shall be convicted of the crime of rape shall be guilty of felony, and being convicted thereof, shall be liable, at the discretion of the Court, to be kept in penal servitude for life, or for any term not less than three years, or to be imprisoned for any term not exceeding two years with or without hard labour.' Since these changes have been made in the law, it has been alleged that the crime has undergone a considerable increase. On the average of four years, rapes increased 57 per cent. ('Law Times,' 4th Jan. 1845); and it was stated officially in Parliament, in 1847-8, that the increase had actually amounted to 90 per cent. since the abolition of capital punishment!

Medical evidence is commonly required to support a charge of rape, but it is seldom more than corroborative; the facts are, in general, sufficiently apparent from the statement of the prosecutrix. There is, however, one case in which medical evidence is of some importance,—namely, when a false accusation is made. In some instances, as in respect to rape on infants and children, the charge may be founded on mistake; but in others there is little doubt that it is often wilfully and designedly made, for motives into which it is here unnecessary to inquire. The late Professor Amos remarked, that for one real rape tried on the Circuits in his time, there were on the average twelve pretended cases! In some few instances these false charges are at once set aside by medical evidence—in others, medical men may be sometimes the dupes of designing persons; but in the majority, the falsehood of the charge is proved by inconsistencies in the statement of the prosecutrix herself. I am informed that in Scotland, where there is a public prosecutor and a careful preliminary inquiry, false charges of rape are exceedingly rare. The *consent* of the girl does not excuse or alter the nature of the crime when she

is under ten years of age, since consent at this period of life is invalid; and the carnal knowledge of such a girl is rape in law, and is made a felony by the 24 & 25 Vict. c. 100, s. 50. Even the solicitation of the act on the part of the child does not excuse it.

The duty of a medical witness on these occasions is very simple; and perhaps this will be best understood by considering the subject in relation to females at different ages. On being called to examine a person on whom a rape is alleged to have been committed, the first circumstance which a practitioner should notice is the precise *time* and date at which he is summoned, taking an early opportunity of comparing his watch with some neighbouring clock. This may appear a trivial matter, and one wholly irrelevant to the duties of a medical practitioner; but it is to be observed, that the time at which a surgeon is required to examine a prosecutrix may form a material part of the subsequent inquiry. It will be highly important to the defence of a person accused, if it can be proved that the female did not take the earliest opportunity to complain; and it may be also the means of defeating an alibi falsely set up by an accused person in his defence.

Casper states, from his experience, that rapes on children are by far the most frequent. Out of 111 cases which he had been called on to examine up to 1856, the ages of the females upon whom the crime was perpetrated were, respectively—from 2½ to 12 years, 78: from 12 to 14 years, 17: from 15 to 18 years, 7: from 19 to 25 years, 7: at 47 years, 1: and at 68 years, 1. Hence it follows, from this series of cases, that above 70 per cent. of all rapes are perpetrated on girls below the age of 12 years. ('Gerichtlich. Med.' vol. 2, p. 130.)

It is rare that cases of rape are tried without medical evidence; occasionally an attempt is made to dispense with it, and the result is generally an acquittal. Juries naturally dislike to convict persons of this serious crime, unless the statement of the prosecutrix is corroborated by medical facts and opinions. (*Reg.* v. *Walker*, Maidstone Winter Assizes, Dec. 1862.) Medical evidence in cases of rape may be derived from four sources:—1. Marks of violence about the genitals. 2. Marks of violence on the person of the prosecutrix or prisoner. 3. The presence of stains of the spermatic fluid, or of blood, on the clothes of the prosecutrix or prisoner. 4. The existence of gonorrhœa or syphilis in one or both. This evidence will vary according to the age of the female and other circumstances:—

RAPE ON INFANTS AND CHILDREN.

The sexual organs should in these cases present marks of injury if the crime has been completed, and there has been *any resistance on the part of the child*: for it is impossible to conceive that forcible intercourse should take place without the production of ecchymosis, the effusion of blood, or a laceration of the pudendum. Even without reference to manual violence on the part of the assailant, if an adult, the size of the male organ must necessarily cause much local injury in the attempt to enter the vagina of a child. If the violation has taken place within two or three days, the appearances presented by the parts may be as follows:—1. Inflammation, with more or less abrasion of the lining membrane. 2. A muco-purulent discharge from the vagina, of a ropy consistency and of a yellowish or greenish-yellow colour, staining and stiffening the linen worn by the girl; the mucous membrane of the urethra is inflamed, rendering the discharge of urine painful. 3. In recent cases blood may be oozing from the abraded membrane, or clots of blood may be found deposited in the vulva. 4. The hymen may be entirely destroyed, or (what is more commonly observed) it may present on careful examination one or more lacerations. Owing to the inflamed state of the parts, the proper

examination of the hymen is rendered difficult—any attempt to separate the thighs for this purpose causing great pain. For this reason, also, the child walks with difficulty and complains of pain in walking. 5. Lastly, the vagina may be unnaturally dilated.

It has been propounded as a serious question, whether a rape can be perpetrated on children of tender age by an adult man; and medical witnesses at trials have adopted conflicting opinions. Some are inclined to regard all such charges as unfounded, and to seek for other medical explanations of the symptoms above described. This practice has been carried of late years to an undue extent, simply because many of these charges have been proved to be false: but common experience, supported as it is by the accurate observations of Casper (p. 440, *ante.*), show that there is too frequently a real foundation for the charge in reference to children, and that a girl is not to be discredited merely because of her tender age. This would be conferring impunity on the acts of a vile class of offenders. In all cases there should be good medical evidence and a corroboration from circumstances.

For the *legal* establishment of the crime, proof of penetration only is demanded (24 & 25 Vict. c. 100, s. 63). In a case of old date, *Rex* v. *Russen*, it was held that a degree of penetration so slight as not to injure the hymen would be sufficient in law for the completion of the crime. In the case alluded to, the hymen of the child was proved to be entire, and under the direction of the judge, the prisoner was convicted and executed. This trial took place in 1777; but Gurney, B., subsequently held that there must be a sufficient penetration of the male organ to rupture the hymen; and unless this membrane was found ruptured, the crime would not be complete in law. (*Rex.* v. *Gammon*, Archbold, 'Crim. Plea.' p. 407.) This decision was afterwards overruled by the judges, in a case reserved for their consideration by Coleridge, J., and reported in 9 Carrington and Payne. (See also *Reg.* v. *Lines*, 1 Carrington and Kirwan's 'Reports.') It is now, therefore, an admitted principle, that a sufficient degree of penetration to constitute rape in law may take place without necessarily rupturing the hymen; but in a special case there must be medical evidence to show that there was actual penetration—the degree of penetration being quite immaterial. It is true that there could not be a complete introduction of the adult male organ into the vagina of a child without a rupture or laceration of the soft parts; but the absence of such marks of violence would not justify a medical witness in denying the perpetration of the crime, since the law does not require proof either of a complete or of a violent introduction. Penetration to the vulva is sufficient to constitute the crime.

In a case brought before a London magistrate some years since, the evidence left no doubt that the crime had been committed on the person of a girl about ten years old. The surgeon stated that there were considerable marks of violence about the pudendum, but completion (*i.e.* complete penetration) was, in his opinion, physically impossible on a child under ten years of age. Upon this evidence the charge of felony was abandoned. In the following case the child was older, but the facts bear immediately upon the question which we are here discussing. It was tried at the Central Criminal Court in March 1843, and the particulars were communicated to the profession by Mr. Adams. ('Lancet,' March 25, 1843.) A man was charged with a rape upon his own child, a girl fourteen years of age. Mr. Adams examined the child about two days after the alleged rape, when he found no injury about the vulva or adjacent parts, and the hymen was unruptured. He gave a positive opinion at the trial that no rape had been committed; but two other medical witnesses, men of experience and integrity, stated their belief, that the crime had been perpetrated. It appears that they had examined the child soon after the alleged offence, and a day or two before Mr. Adams. The prisoner was acquitted

of the rape, but found guilty of the assault. The absence of any marks of injury about the vulva so short a time after the alleged criminal act, and the fact of the hymen being unruptured, in some measure justified the opinion of Mr. Adams, that there was no medical proof of a rape having been committed: at the same time he candidly restricted his opinion, by saying, that if by rape we are to understand penetration to the vulva, then was it effected; but there was no evidence to show vaginal penetration—on the contrary, the unruptured state of the hymen in an alleged forcible intercourse was against this view. The only remark which this case requires is, that the Statute law says nothing about the rupture of the hymen as a necessary part of the evidence: it merely requires from the medical witness proof of penetration; this may occur, and the hymen remain intact. The distinction here drawn by the witness has no real existence. From the decisions of our judges, vulval penetration, whether with or without violence, is as much a rape as vaginal penetration.

In Scotland this question came formally before the judges in the case of *Macrae* (High Court of Justiciary, 1841). It was insisted by the prisoner's counsel, that there should be proof of full and complete penetration; and there was no sufficient evidence to show that penetration had taken place into the canal of the vagina beyond the vulva. Lord Meadowbank charged the jury to the effect that the evidence of the prisoner's guilt was complete; that scientific and anatomical distinctions as to where the vagina commenced, were worthless in a charge of rape; and that by the law of Scotland it was enough if the woman's body was entered. In a case like this, where there was no evidence of emission, and the girl was young, he did not consider it necessary to show to what extent penetration of the parts had taken place,—or to prove that it had gone either past the hymen, into what was anatomically called the hymen, or even so far only as to touch the hymen. The prisoner was convicted. ('Cormack's Edin. Jour.' January, 1846, p. 48.) I am informed that, up to the date of the case of *Macrae*, it had been the practice with the Scotch judges to require proof of *full* and *complete* penetration. See on this question a paper by Dr. Easton ('Glasgow Med. Jour.' July 1859, p. 129). Professor Skrzezka has examined the hymen in young children, and has published a full account of the different appearances which it may present either from natural causes, from disease, or as the result of any indecent assault. (Horn's 'Vierteljahrs.' 1866, 2. 47; also a paper by Dr. Hofmann in the same journal for 1870, 1, 329.)

Marks of violence.—When, as in the case above related, there are no marks of violence or physical injury about the pudendum of a child, whether because none originally existed, or they existed and had disappeared in the course of time, a medical witness must leave the proof of rape to others. He can only answer questions of possibility or probability, according to the special facts proved. It is, however, in all cases his duty to be guarded in giving an opinion that a rape has been perpetrated, when there is a total absence of marks of violence on the genitals. It is true that rape in a legal sense may be perpetrated without necessarily producing such marks on a child, but then the proof of the crime will not depend on *medical evidence* only. The absence of marks of violence on the genitals, when an early examination has been made, furnishes a strong presumption that rape has *not* been committed on these young persons. It is obvious that a false charge might be easily made and sustained, if medical opinions were hastily given on the statements of a mother and child, when there was no physical appearance to corroborate the accusation. See on this subject a paper by M. Toulmouche, 'Ann. d'Hyg.' 1864, 2, p. 338.)

On the other hand, if marks of mechanical violence are present, they must

not always be hastily assumed as furnishing proofs of rape; for cases are recorded in which such injuries have been purposely produced on young children, as a foundation for false charges against persons with a view of extorting money. The proof or disproof of facts of this kind must rest more upon general than on medical evidence, unless the injuries obviously indicate the use of some weapon or instrument. It should be remembered that the hymen is not always present in young children; it may be, according to some, congenitally deficient, or, what is more probable, it may have been destroyed by ulceration or suppurative inflammation of the parts,—a disease to which female infants of a scrofulous habit are very subject. The mere absence of this membrane, therefore, can afford no proof of the perpetration of the crime, unless we find traces of its having been recently torn by violence.

Other and more important deductions may, however, be drawn from the presence of severe injuries on the genitals, *i.e.* of rupture, or laceration of the vagina or perinæum. It is difficult to obtain accurate medical reports of these cases as they occur in England: but it is quite clear that the male organ may produce much physical injury whether the child does or does not resist the attempt. (Casper's 'Vierteljahrsschrift,' April 1863, p. 337.) Dr. Chevers, in referring to Indian experience, says that in a large proportion of rapes on children, it was very clearly proved that rather severe injuries had been inflicted on them. In the 'Nizamut Adawlut Reports' (1853-5), there are several instances recorded in which the vagina was lacerated. Out of 66 trials for rape, there were 25 convictions: and in one-half of these, the females were under the age of *twelve* years. In the case of a girl, æt. 12, there was a rupture of the lower part of the vagina to the extent of half an inch. In another, a child of six, but apparently much younger, had suffered, as a result of rape, from rupture of the hymen and laceration of the perinæum and vagina. In one instance the violence proved fatal, but the medical particulars were not given ('Med. Jur. for India,' p. 468). I have already observed that injuries have been sometimes intentionally produced on the genitals of infants and children by mechanical means, with a view of extorting money in laying false charges of rape. Dr. Chevers, from whose work I have quoted the above facts, states, on the authority of a missionary well acquainted with the habits of the natives of Calcutta, that mechanical means are commonly employed, even by the parents of immature girls, to render them *aptæ viris*, especially by the use of the fruit of the plantain. In one instance, a man was convicted of rape who, according to the evidence, had previously used a small stick—*ad deobstruendam viam*. This led to effusion of blood, but to no permanent injury. It is scarcely credible that mothers should resort to such practices, nevertheless the facts are too well accredited to admit of denial. Casper officially examined a girl only ten years of age, whose vagina had been dilated by the mother, at first with two fingers, afterwards with four, and finally by means of a long stone introduced into it, in order to fit her for intercourse with men! The hymen was not destroyed, but there were lacerations in it; the mucous membrane was reddened and painful to the touch, and there was a mucous discharge from it. ('Gerichtliche Medicin,' vol. 2, p. 162.) If this child, tutored by its mother, had been taken before a surgeon for examination, on the allegation that some man had committed a rape upon her, an opinion confirmatory of the charge might have been given. A fact like this proves that medical evidence can do no more than show that a girl with such appearances about her sexual organs, has suffered from some mechanical violence applied to the part, but whether by the human member, or any other physical means, it would be impossible to say. The only chance of getting at the truth in such cases is by a rigorous cross-examination of the mother and child in the absence of each other.

In April 1840 Dr. Brady communicated to the Dublin Association of Physicians a case of alleged rape on a female infant only eleven months old, in which the violence done to the genitals proved fatal. During the march of a regiment to Templemore, the prisoner *Hume*, a soldier, who was with the sick car, took the child from its mother (Mary Hall) to carry it some way for her. The child was quite well when he took it: he walked on quickly, and was out of the mother's sight in half an hour. When she came up, he had the child standing on the grass facing him, and he was bent over it: with one hand he held the child's petticoats up, and his other was covered with blood. He told the mother that the child was ill and passing blood. The mother rolled it in her shawl, and carried it until she reached Templemore, when she went to an apothecary; but no examination was then made, and it was not until the next morning that, in washing the child, the marks of violence were seen. This was the substance of the mother's evidence, which was uncontradicted at the trial. A surgeon examined the child twenty hours after the alleged outrage: it was then in a state of complete collapse, and it died in a few hours. On examination all the external parts of generation were found in a torn state, and violently inflamed; the perinæum was torn nearly through; the nymphæ, and the mucous lining of the labia and clitoris were likewise lacerated, so that the whole presented the appearance of a large lacerated wound in a high state of inflammation. After death, besides the above-mentioned appearances, the vagina was found greatly dilated and torn from its attachment to the neck of the uterus posteriorly, making a large opening into the cavity of the abdomen, in which a quantity of bloody serum was effused. ('Med. Gaz.' vol. 26, p. 160.) Sir W. Wilde of Dublin, on making inquiry into the particulars of this case, ascertained that there was no proof of the actual perpetration of rape. The severe injuries to the genital organs which led to death were produced, it was alleged, by the fingers,—the man being at the time partially intoxicated. ('Dub. Quart. Jour. of Medical Science,' Feb. 1859.) This can scarcely be regarded as exculpatory; for if a female child is destroyed by culpable violence to the genital organs, it can create no difference, on a charge of manslaughter, whether the injuries were produced by the fingers or by the male organ. A case in which much violence was done to the genitals of a girl eight years of age, has been reported by Dr. Lender of Soldin. (Horn's 'Vierteljahrsschrift,' 1865, 1, p. 355.) The parts were swollen and lacerated, the hymen had been recently destroyed and blood was effused. These injuries were attributed, on the part of the defence, to a criminal assault by a boy only six years of age, which was wholly improbable, or to the introduction of the fingers, but these two theories were shown by Dr. Lender to be inconsistent with the condition of the parts, and with the medical facts proved. The defence was concocted to screen the criminal act of an adult. Dr. L. Penard, has published some good practical remarks on this subject in the 'Ann. d'Hyg.' 1860, 2, p. 364.

In January 1858 a girl seven years old was brought into Guy's Hospital, owing to injuries resulting from a perpetration of rape by a boy under seventeen years of age. About half an hour had elapsed: she was then examined by Mr. Hicks, the house-surgeon, and he found that there was a complete destruction of the hymen, with a laceration of about one-eighth of an inch extending into the perinæum. There had been profuse bleeding, as the clothes were saturated with blood. There was then no complaint of pain, and there were no scratches or marks of violence on any part of the body. There was no discharge of a purulent kind. The child was of a scrofulous habit; but she was not suffering from vaginitis, and appeared in other respects perfectly healthy. I saw the girl with Mr. Hicks about forty-eight hours after the *occurrence; the* bleeding had then ceased, and the extent of the lacerations

was very perceptible. There was no discharge of any kind from the vagina, and no inflamed or swollen condition of the parts. The boy was examined by Mr. Hicks about an hour after the perpetration of the rape, and although he had been under strict custody, and had had no opportunity of changing his clothes, there was *no blood* found about his private parts, or on his clothing. It is probable, as the boy was interrupted in the act by the screaming of the girl that he suddenly withdrew after having caused the laceration, and that the bleeding was an after effect of oozing from the ruptured vessels. This is an important fact, because, had not the circumstances been known, the absence of blood on his person might have been construed into a strong proof of innocence. Dr. Sawyer met with a case in which a rape was committed on a girl æt. 5. There was a bruised and swollen state of the genitals; the hymen was not ruptured, and there was no laceration of parts. In spite of this, a large amount of blood had been lost. This bleeding, he considers, took place from the hymen, which was in a highly congested state. The man who had perpetrated the crime was examined soon afterwards, but no appearance of blood was found on his organs; there were a few stains only on the front of his clothing. ('New Orleans Med. Gaz.' 1858, p. 283.) A case occurred to Mr. Sells, of Guildford, in 1863, in which he found on examining the person of a girl said to have been violated, laceration of the hymen, a clot of blood recently effused lying on the vulva, and the thighs of the child smeared with blood, quite fresh; there was also blood on the sheets of the child's bed. The next morning he examined the accused, but he could find no trace of blood upon him or on the clothing which he wore at the time of the alleged assault. In this case, as there was a failure of identity, the accused was discharged.

Sometimes, owing to the violence used, the parts are much lacerated; and inflammation, followed by sloughing or mortification, may set in and destroy life, especially in children of an unhealthy habit. Care should be taken that the symptoms of a malignant form of disease (noma, from *νεμω I consume*, signifying destructive ulceration), to which female children are sometimes subject, are not mistaken for criminal violence. The case of *Amos Greenwood* (Liverpool Winter Assizes, 1857) is of some interest in this respect. The prisoner was convicted of the manslaughter of a female child under ten years of age, as the result of injuries produced by a criminal assault. The main facts against the prisoner were considered by the Court and jury to be clearly proved: he was convicted, and sentenced to penal servitude for life. The propriety of this conviction was strongly questioned by Sir W. Wilde in a paper published in the 'Dublin Quarterly Journal' of February 1859. It would be impossible in this place to give an analysis of the conflicting statements and counterstatements which have been made respecting Greenwood's case; but there is no reason to doubt that the prisoner was accessory to the death of the child. A late distinguished member of the Northern Circuit, who took no part in the case, but was present and heard the whole of the evidence, informed me that it was satisfactorily proved that violence had been done to the genital organs, and in the general opinion of the bar the man was rightly convicted. The reader will find the evidence fully discussed in the 'Medical Times and Gazette' for 1859, April 9, p. 361; April 23, p. 417; April 30, p. 442; May 21, p. 518; May 28, p. 544; June 18, p. 638; and July 2, p. 21. In the following case of *noma pudendi* no charge of rape was made against any person, but the facts may serve to show under what circumstances such a charge might be made. A girl, æt. 5, died in December 1865, as it was suspected from the effects of poison. There was a congested state of the stomach, but no poison was found. The genital organs externally, and the skin around and beyond the anus, were intensely inflamed,

swollen, and ulcerated, and in an approaching state of gangrene or sloughing. The hymen was destroyed posteriorly, and the lining membrane of the vagina and uterus was much inflamed, of a dark purple colour, with softening and disorganization of substance. The upper inguinal glands were enlarged on both sides. The child was in a neglected and dirty state. The mother attributed this diseased condition of the genitals to a fall which the girl had met with a fortnight before. There was no ground to believe that anyone had had connection with the deceased.

Mr. Colles has reported a case in which a rape was committed by an adult on a child eight years old; it terminated fatally from peritonitis, as a result of the violence, six days after the assault. The child stated that the accused had had forcible connection with her, causing much pain and loss of blood. There were no marks of violence (bruises?) externally, but the orifice of the vagina was lacerated in its entire circumference, and the perinæum was nearly torn through. It was found, on inspection, that the orifice, as well as the whole of the vagina, was in a state of gangrene, and that its posterior wall had been lacerated at its line of junction with the uterus to the extent of an inch. There was no ulceration; the labia and clitoris had not undergone any change. ('Med. Times and Gaz.' June 2, 1860, p. 560.) The prisoner subsequently confessed his guilt. A case was communicated by Dr. M'Kinlay to the 'Glasgow Medical Journal' (July 1859, p. 140), which proves that extensive injuries may be produced on a child by the act of violation. The girl in this instance was about six years of age, and very intelligent. From her description of the assault, it appears that she fainted, probably owing to the severity of the pain. When examined, it was found that the vagina was ruptured in various directions. One laceration extended from the lower part downwards, dividing the recto-vaginal septum and perinæum down to the verge of the anus. There was a lacerated opening in the coats of the rectum; the orifice of the vagina was lacerated upwards as well as laterally; the parts were raw, swollen, and very tender. When the child was first seen, there was blood on the limbs and clothes; she recovered from these serious injuries in about two months. In reference to the case of Amos Greenwood (*suprà*), it was a question raised in favour of the prisoner, whether rupture of the perinæum could or could not be effected in rape on a girl. Some eminent members of the profession appear to have doubted the possibility of rupture being produced under these circumstances (see Sir W. Wilde's paper, 'Dub. Med. Journal,' February 1859); but the facts here recorded show that it may occur.

In a case which occurred to Dr. Bullen, a girl aged seventeen was violated by several men in succession: she then became insensible, and was unable to state how often the act had been perpetrated. When examined the next day, the genitals were bloody, inflamed, and painful; the hymen was ruptured, the fourchette torn, and the labia and perinæum presented a dusky appearance of inflammation. In spite of treatment ulceration followed, and the clitoris, nymphæ, perinæum, labia, and mons veneris sloughed away, leaving the pubis exposed. After a long illness the ulcer healed, and the girl left the infirmary. At no period were there symptoms of syphilis. Such a state of the parts, obviously a result of violence, might have been erroneously ascribed to *noma* or malignant ulceration or mortification of the genitals, as it is observed in some eruptive fevers. ('Dub. Med. Press,' March 1840; Beck's 'Med. Jur.' vol. 1, p. 160.)

Purulent discharges from the vagina. Vaginitis. Infantile leucorrhœa.—The existence of a purulent discharge from the vagina, as a result of vaginitis or inflammation of the vagina, has been erroneously adduced as a sign of rape

in young children. The parents, or other ignorant persons who examine the child, often look upon this as a positive proof of impure intercourse; and perhaps lay a charge against an innocent person, who may have been observed to take particular notice of the child. Some cases are reported, by which it would appear that men have thus narrowly escaped conviction for a crime which had really not been perpetrated. Dr. Percival, in his 'Medical Ethics' (3rd. ed. 1849, p. 117), has related a case which has been the subject of frequent quotation and comment in reference to false charges of rape. A girl, æt. 4, was admitted into the Manchester Infirmary in February 1791, on account of a mortification of the female organs and general depression of strength. She had been in bed with a boy fourteen years old, and there was reason to suspect that he had taken criminal liberties with her. The mortification increased, and the child died. The boy was tried on a charge of rape at the Lancaster Assizes, but acquitted on evidence being adduced that several instances of a similar disease had appeared among girls about the same period of time, in which there was no reason to suspect injury or guilt. In one of these cases there was typhus-fever with a mortification of the genitals. There was no cause of death discoverable on inspection: the lumbar glands were of a dark colour, but all the viscera were sound. This case, with the whole of Mr. Kinder Wood's paper on the subject, has been republished by Mr. Kesteven. ('Med. Times and Gaz.' 1859, April 23 and 30.)

A purulent discharge with aphthous ulceration is occasionally a result of vaginitis (inflammation of the vagina) in young children. It may arise from dentition, or local causes of irritation—as worms or uncleanly habits,—and is observed especially in children of a scrofulous habit. It is frequently met with in girls up to six or seven years of age: and children thus affected have been tutored to lay imputations against innocent persons for the purpose of extorting money. This state may commonly be distinguished from the effects of violence, either by the hymen being entire—or by the non-dilatation or laceration of the vagina or perinæum—by the red and inflammatory condition of the mucous membrane, and the abundance of the purulent discharge, which is commonly much greater than that which takes place as a mere result of violence. Capuron mentions two cases, in which charges of rape on children were falsely made against innocent persons, on account of the existence of a purulent discharge the nature of which had been mistaken. ('Méd. Lég. des Accouchemens,' p. 41.) Sir Charles Locock observes that the purulent discharges of female children are attended with redness and swelling of the sexual organs, and are sometimes accompanied with excoriation and sloughing of the skin, owing to the irritating nature of the matter. They are so connected with dentition, that they not only appear with the first and second set of teeth, but sometimes even when the wisdom-teeth are irritating the system at a mature age. Mr. South, commenting on this statement ('Chelius's Surgery,' vol. 1, p. 161), justly remarks that a knowledge of these facts 'is highly necessary, and is very properly insisted on, as there is no doubt that many men have suffered capital punishment from the ignorance of practitioners on this point; and even now, with our better knowledge, it is by no means unfrequent to hear of medical men giving a decided opinion which is almost certainly erroneous, upon the gonorrhœal character of pudendal discharges, and thus jeopardizing the character if not the liberty of an innocent man. On all occasions of giving opinion or evidence in such cases, a practitioner is bound to speak with extreme caution, and only on the most incontestable proof (which by a mere examination of the parts it is almost impossible for him to attain), before he makes a positive statement as to the gonorrhœal character of the discharge.' The importance, if possible, of making a clear distinction between gonorrhœal

inflammation and vaginitis in children is occasionally strongly felt in reference to cases which involve charges of felony. In February 1872, I was consulted in reference to a charge against a father for criminal intercourse with two of his daughters, one of them nine and the other fourteen years of age. If the purulent discharges were gonorrhœal, there was a strong presumption of his guilt, if only of the ordinary kind, arising from vaginitis, he might be innocent, and the accusation made against him false. (See 'Ann. d'Hyg.' 1864, 2, 333, and 1860, 2, 131, 345.)

A gonorrhœal discharge is generally very profuse—much more profuse than that purulent discharge which is simply the result of such violence as is produced in the commission of rape. There is another fact worthy of notice, namely, that the last-mentioned discharge, besides being less profuse, lasts for a much shorter time. Casper has recommended that in doubtful cases another examination of the sexual organs should be made in ten or twelve days. If the purulent discharge has then ceased, or is ceasing, there is good reason to believe that it was not the result of gonorrhœa, but of some temporary cause of inflammation in the mucous membrane. ('Klinische Novellen,' 1863, p. 10.) Of false charges of this description he furnishes various instances (p. 19).

Assuming that the surgeon is satisfied, from a careful examination, that the purulent discharge must have existed before the alleged assault, and that it is of the ordinary inflammatory character with which young girls are liable to be attacked, this would not justify him in affirming that no rape had been attempted or perpetrated on the child. Girls labouring under this disease may be the subjects of rape, and it will then be necessary to seek for further evidence on the condition of the hymen, the lining-membrane of the vagina and the vulva. If nothing is found beyond what is consistent with disease, there is an absence of medical evidence to prove that any rape has been committed. An aphthous state of the membrane of the vagina must not, under these circumstances, be ascribed to injury caused by mechanical violence. (Casper's 'Gerichtliche Medicin,' vol. 2, p. 148.)

This subject long since attracted the attention of Mr. Kinder Wood, Sir Astley Cooper, Mr. Lawrence, and other medical men: but there is still much popular ignorance in reference to it, and false charges of rape on children are now not unfrequently made. Mr. Kesteven met with a case in which a discharge from the vagina of a child nine years of age was considered by the parents to indicate that criminal intercourse had been had with her. There was no mark of contusion or violence on or about the pudendum or in the vagina, and the case was very properly pronounced to be one of simple vaginitis. ('Med. Gaz.' vol. 47, p. 372.) A similar case was referred to me in which a soldier was supposed to have infected a child; but an investigation showed that it was a purulent discharge depending on inflammation of the vagina. In another, which was the subject of a trial at the Somerset Autumn Assizes of 1857 (*Reg.* v. *Hodges*), there is reason to believe that the accused was improperly convicted of a criminal assault on a child, when the appearances were really due to the existence of vaginitis from natural causes. (See report of the trial by Dr. J. Wybrants, of Shepton Mallet, 1861; also a letter by Mr. Hudson, 'Med. Times and Gaz.' April 13, 1861, p. 403.) Charges of rape are sometimes rashly made in these cases, either in the absence or in actual defiance of a medical opinion. Mr. Hamilton has reported an instance of this kind in a child æt. 7 ('Dub. Med. Press,' May 4, 1853, p. 276.) There was an inflammatory state of the vagina, and a yellowish discharge issued from it; but there was no sign of rupture, contusion, or any mark of violence. The medical opinion was to the effect that there was nothing to show that any violence had been used to the child, or that she had been infected with the venereal disease.

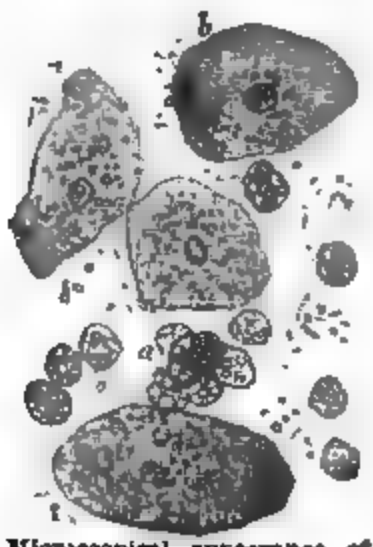
Nevertheless, the accused was placed on his trial; but the evidence of the child broke down, and the man was acquitted. In the same paper, Mr. Hamilton relates a case in which syphilis was communicated to a girl æt. 6 by a boy aged 19. In this case the accused was found to have numerous chancres around the orifice of the prepuce, and on examining the little girl, there were chancrous excoriations on the inside of the labia. Other syphilitic symptoms manifested themselves. The prisoner was convicted.

The subject of infantile leucorrhœa has been fully investigated by Sir W. Wilde, of Dublin. ('Medico-legal Observations,' &c., 1853.) This gentleman has collected numerous instances illustrating in a remarkable manner the great danger to which innocent persons are exposed by reason of false charges of rape on children. Two of these are especially noticed in his essay. A charge was raised against a respectable man, that he had had intercourse with, and produced disease in, two children. The day and hour were circumstantially given, extorted as it appears from the children by the parent, and the man was put upon his trial. The appearances were such as are usual in these cases,—a purulent discharge from the vagina with some excoriation, but no bruise, laceration, or mark of violence on the pudendum. There had not been any penetration of the vagina. The charge against the prisoner, although unsupported by any affirmative circumstances, received some strength from the admission made by one medical witness for the prosecution,—namely, that the appearances *might* have been the result of violence, and that the discharge *might* have been produced by friction with the member of a healthy man. (Wilde, op. cit. p. 14.) It was proved that the prisoner was not affected either with gonorrhœa or syphilis. Drs. Geoghegan, Churchill, and other medical witnesses of repute, gave testimony to the effect that the child was labouring under an ordinary form of disease, and that there was no medical indication that it had been subjected to any kind of violence. This testimony was not considered by the Court to furnish a complete answer to the charge, since it was inferred that the appearances on the child *might* have been caused by the accused, without any marks of violence being left on the pudendum! So strong was this feeling, that, had the case rested here, it is probable the accused would have been convicted upon the unsupported statement of the child. An alibi, was, however, clearly proved, and the man was acquitted. In this instance, it will be perceived it was alleged that a man who laboured under no disease had caused a purulent discharge in a child! At the same time, it was admitted that the pudendum had sustained no violence whatever. Medically speaking, there appears to have been not the slightest pretence for charging the accused with the perpetration of rape; the appearances might or might *not* have been caused in the manner suggested. Under such loose medical evidence as this no person would be safe. An acquittal from an unfounded charge must depend upon the man who is accused being able to prove a distinct alibi, *i.e.* he must prove his innocence. The statement of the child may be simple and artlessly made. At this tender age a girl may be easily induced, by the fear of punishment and by the aid of leading questions put by a parent, to admit that some one had committed an assault upon her. The statement once made may be persevered in, and its inconsistency may not always be brought out by cross-examination.

If the child is really labouring under *syphilis* or *gonorrhœa*, this may furnish, *cæteris paribus*, evidence of impure intercourse, either with the accused or some other person; but we should be well assured, before giving an opinion, that the discharge is really of a gonorrhœal and not simply of a common inflammatory (purulent) character. The person accused, as in the case above related, might be at the time free from the disease, or, if labouring under it, then we

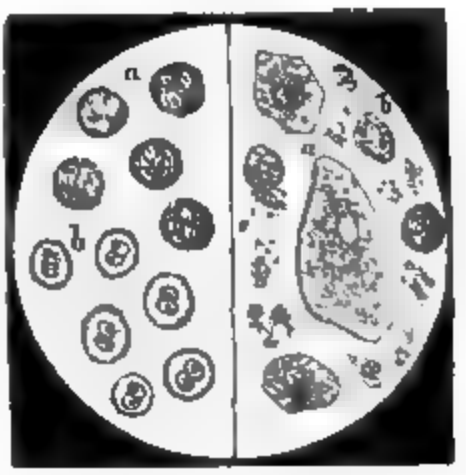
should expect that the discharge had suddenly made its appearance in the child, with the usual severe symptoms, at a certain interval of time after the alleged intercourse—*i.e.* from the third to the eighth day. When these conditions do not exist, it is extremely difficult to form a medical opinion on the subject; since there are no certain means, by the microscope or otherwise, of distinguishing common purulent discharges from those which are gonorrhœal or syphilitic. In the annexed engraving (fig. 176) the microscopical appearance of the ordinary mucous discharges from the vagina is represented. Associated with the rounded granules of mucus there are large polygonal bodies which are epithelial scales, or pavement-epithelium. In fig. 177 the left side (1)

Fig. 176.



Microscopical appearance of mucous discharges magnified 500 diameters. (Gosse.)

Fig. 177.



Pus and mucus magnified 450 diameters. (Gosse.)

represents the appearance of pus: *a* showing the characters of the normal globules, and *b* the same after treatment with acetic acid. On the right side (2) the mucous globules (*b*) are seen associated with epithelial scales, *a*. When microscopical evidence fails, proof can be derived only from non-medical sources. A case occurred to M. Biessy, in which a merely mucous discharge in a girl was pronounced to be syphilitic, and the person who was falsely accused of rape, narrowly escaped conviction. (Briand, 'Man. Complet de Méd. Lég.' 1846, p. 81.) The purulent matter of gonorrhœa does not differ microscopically from that produced in other forms of disease. It presents the characters shown in fig. 177 (1). Donné has given an illustration of the microscopical appearance of syphilitic pus from a chancre; the annexed engraving (fig. 178) represents a portion of his illustration. ('Cours de Microscopie.') It consists chiefly of pus-globules intermixed with vibrios (infusory animalcules).

Fig. 178.

Pus from a chancre with vibrios. (Donné.)

We should further distinctly satisfy ourselves that gonorrhœa in a child, if it exist, could not have arisen from infection by any accident irrespective of intercourse. This limitation is rendered necessary by the publication of a report of two cases by Dr. W. B. Ryan ('Med. Gaz.' vol. 47, p. 744), in which two sisters, one of one year and the other of four years of age, received the infection by reason of their being washed in a vessel of water with a sponge used by a young woman affected with profuse gonorrhœal discharge. Dr. Ryan clearly traced the origin of the discharge to this unexpected accident.

Had an accusation of rape been made against a man labouring under gonorrhœa, it is not at all improbable that this condition of the children, resulting from an unsuspected accident, would have been taken as an unanswerable proof of his guilt! Cases of this kind, thus accurately observed, convey an important caution to medical witnesses; *i.e.* that they should not infer criminal intercourse merely from the existence of a gonorrhœal discharge, in the absence of marks of violence to the genitals or of other strong corroborative proofs.

As a summary of these remarks on purulent and muco-purulent discharges, we may observe that they should not be admitted as furnishing corroborative evidence of rape, except,—1st, when the accused party is labouring under gonorrhœal discharge; 2ndly, when the date of its appearance in a child is from the third to the eighth day after the alleged intercourse; and 3rdly, when it has been satisfactorily established that the child had not suffered from any such discharge previously to the assault. It may be said, however, that all these conditions may exist, and yet the accused be innocent; for a child may, either through mistake or design, accuse an innocent person. This, however, removes the case entirely from the hands of a medical jurist. (The reader will find much useful information on this subject in a paper by Dr. L. Penard, 'Ann. d'Hyg.' 1860, 2, 130, 345.)

In *Reg.* v. *Mosely* (Cent. Crim. Court, Sept. 1843), the prosecutrix, a child between twelve and thirteen years of age, charged the defendant with having committed a rape upon her, alleging that she had made all the resistance in her power. Dr. Merriman stated that he examined the prosecutrix two or three days after the alleged offence was committed, but could not give any decided opinion upon the case, although there was every appearance of violence having been used. Another medical witness stated that the prosecutrix had been under his care for the last eight or nine days for a disease (gonorrhœa,) with which, in his opinion, she had been infected for a considerable time; and a third proved that the prisoner was not infected with this disease. Dr. Merriman, however, is reported to have said that the prosecutrix was not labouring under the disease when he examined her. It is difficult to explain how this discrepancy on a matter of fact of some importance could have arisen. The jury acquitted the prisoner, probably not believing the statement made by the prosecutrix. In another case (*Reg.* v. *M'Donough*, Cent. Crim. Court, Oct. 1843), Mr. French and Mr. Tucker deposed that the gonorrhœa under which the prosecutrix (æt. 15) laboured had not existed longer than a week: it might have been of longer standing, but it certainly could not have existed for six weeks, the date at which it was alleged that the rape had been perpetrated by the prisoner, and the disease communicated. Upon this evidence the prisoner was acquitted. (See also on this subject Casper's 'Gerichtliche Medicin,' vol. 2, p. 167.)

The following case was tried at the St. Louis Criminal Court. A man named *M'Comas* was charged with an attempt to violate a child, æt. 9. The evidence against the prisoner was chiefly based on an extorted admission from the prosecutrix, and on the discovery on her clothes of certain stains supposed to have been produced by seminal fluid. The mother examined the genitals, and found them inflamed and discharging matter, although several weeks had elapsed since the alleged attempt. A medical practitioner was called to the girl; he found the nymphæ and orifice in a state of inflammation, which might have arisen from some morbid cause; but he was unable to give any positive opinion respecting the nature of the discharge. About eight days after this, the girl was examined by Dr. Stephens: the parts were still much inflamed, and discharging muco-purulent matter; the hymen was uninjured. The defence of the prisoner was, that he was not guilty of the assault, and

that he was not labouring under gonorrhœa at the time of the alleged attempt. He was convicted and sentenced to three years' imprisonment. ('British American Journal,' May 1848, p. 19.) It is not improbable that this was a case of vaginal inflammation mistaken for gonorrhœa; for, as it has been already stated, there are no certain means of distinguishing the two kinds of discharges. The jury, however, appear to have put great faith in the testimony of the prosecutrix. The case was therefore decided by moral circumstances, and not by medical evidence. The existence of an unruptured hymen merely proved that there had not been a violent attempt at carnal intercourse.

With respect to marks of violence on the *body* of a child, these are seldom met with, because no resistance is commonly made by mere children. Bruises or contusions may, however, be found occasionally on the legs.

RAPE ON YOUNG FEMALES AFTER PUBERTY.

When the crime is committed on a girl from the age of ten to twelve years, the appearances are much the same as those already described with respect to children below the age of ten years. There is, however, some difference in the legal complexion of the offence. If carnal intercourse be had with the consent of a female between the ages of ten and twelve years, the offender is guilty of a misdemeanor only (24 & 25 Vict. c. 100, s. 51); above the age of twelve years, the consent of the girl does away with any imputation of a legal offence. Girls who have passed this age are considered to be capable of offering some resistance to the perpetration of the crime; and therefore, in a true charge, we should expect to find not only marks of violence about the pudendum, but also injuries of greater or less extent upon the body and limbs. It is probable that in these cases, if the charge were well-founded, the hymen would be ruptured, as the intercourse is always presumed to be violent: but there might be some degree of penetration without this being a necessary result, especially if the membrane were small, or placed far up. At any rate, a girl at this age may sustain all the injury, morally and physically, which the perpetration of the crime can possibly bring down upon her, whatever may have been the degree of penetration; and for this reason, it is very properly laid down by our law, that the crime consists in the mere proof of penetration. The fact, however, is generally clearly made out by the statement of the girl. Girls of tender age are sometimes violated by boys; the amount of physical injury inflicted in such cases is less than when the assailant is an adult. In addition to other cases reported, Dr. Geoghegan of Liverpool, communicated to me one which was the subject of a trial at the Liverpool Winter Assizes of 1862. A boy aged seventeen committed a rape on two children, one aged eight years, and the other ten years; he then attempted to commit a rape on a third girl, aged eleven years. These crimes were perpetrated in about half-an-hour, during which time he was alone with the children. He was convicted of felony for rape on the youngest child, and sentenced to four years' penal servitude.

With respect to *marks of violence* on the person, the exact form, position, and extent of these should be noticed; because a false accusation of rape may be sometimes detected by the violence being in a situation in which it was not probable that the ravisher would have produced it. When bruises are found, the presence or absence of the usual zones of colour may occasionally throw light upon the time at which the alleged assault was committed. As these marks of violence on the person are not likely to have been produced with the concurrence of the girl, they are considered to furnish some proof of the intercourse having been against her will. But the physical appearances of rape about the genital organs may be found, whether the connection has been voluntary or involuntary. Thus a recent rupture of the hymen, laceration or

bruising of the vagina with effusion of coagula of blood, swelling and inflammation of the vulva, and stains of blood upon the person, dress, or furniture may be met with in both cases. The question of consent in these cases is of very great importance. It is generally alleged as a defence, and a medical man will find himself compelled to answer this question:—Are the marks of violence found on the genital organs no more than you would expect to find in a girl who had really given consent? In 1868 I was consulted in the following case. A man with a wooden leg (his left leg having been amputated at the thigh) was charged with rape on a girl æt. 15. She was examined soon after the violence, and the labia were found very much swollen, bruised and inflamed. In addition to these appearances on the genital organs, there were the marks of bruises over the right chest, breast and shoulder. The man alleged that the girl gave her consent, whereupon the following question arose —Could such appearances as you have described about the labia have been produced by connection with consent? A reply was given by the medical witness which left the matter in question doubtful. The condition of the genital organs and the marks of violence on the body in this case were adverse to the theory of consent; but in expressing an opinion under such circumstances it must be remembered that, from the difference in the size of the organs of an adult male and a girl of fifteen years of age, it is hardly probable that intercourse with consent could take place without causing subsequent swelling and inflammation of the labia and vagina. In making an examination, the greatest care should be taken by the practitioner to fix, at the time of examination, a probable date for the marks of injury to the genitals or other parts of the body, as it is by the aid of such observations that the truth or falsity of a charge may be sometimes clearly established.

Girls and unmarried young women are liable to *muco-purulent discharges* from the vagina, as a result of which the hymen may be destroyed. This kind of discharge arises from inflammation of the vagina (vaginitis, p. 447 *ante*), and it has been observed to follow an attack of scarlatina. When it exists, its real cause requires the closest scrutiny. (See remarks by Dr. Barnes, 'Med. Gaz.' vol. 46, p. 65.) At a more advanced age, young women are frequently subject to leucorrhœa. These cases are not likely to be mistaken for gonorrhœa; as here the female has it in her power to give some account of the circumstances, from which a medical opinion may be easily formed. It is possible, however, that a woman labouring under leucorrhœa may charge a man with the crime of rape, and affirm that this discharge had arisen from the act of the man. An inflamed and partially ulcerated (aphthous) state of the lining-membrane of the vulva may apparently give support to the accusation. The discharge in leucorrhœa is of a mucous nature (see illustration, page 450, fig. 176)—that of gonorrhœa is of a purulent character—see the same page, fig. 177 (1); but purulent discharges may take place from the vagina as the result of intense inflammation, and quite irrespective of impure intercourse. ('Chelius's Surgery,' by South, vol. 1, p. 160.) It would be impossible to distinguish such discharges from those of gonorrhœa; while a leucorrhœal discharge under great inflammatory action may resemble that of gonorrhœa. Such discharges commencing before, but continuing, and sometimes becoming aggravated, after marriage, have given rise to unfounded suspicions of infection from venereal disease imparted by the husband, and have thus led to suits of divorce. In a case reported by M. Legneau a young married woman suffered from a discharge which was pronounced by a medical man whom she consulted to be gonorrhœal. This led to an application for a divorce. A further examination by other medical practitioners, with a complete history of the symptoms from which she had suffered, led to the conclusion that she was labouring under severe leucorrhœa when she was married, and that this was followed by granular

vaginitis which accounted for the muco-purulent discharge. ('Ann. d'Hyg.' 1870, 2, 192.)

The power of distinguishing gonorrhœal or syphilitic discharges from ordinary purulent discharges has been much debated in reference to the examination of women under the Contagious Diseases Act. Mr. Henry Lee has especially called the attention of the professson to this subject in a lecture before the Medical Society. In a case which occurred under his own observation a free purulent discharge from the vagina with a reddened and inflamed mucous membrane, led him to believe that it was derived from gonorrhœal infection; but a week afterwards the inflammation had disappeared, the mucous membrane was of its usual colour, and the discharge not more than natural. This caused him to reverse his opinion, and to congratulate himself that he had not unjustly accused the patient. ('Lancet,' Feb. 8, 1873, 1, 218.)

False charges of rape may be easily set up by girls at the age of puberty. The falsehood of the charge may, however, be generally elicited by a careful examination of the prosecutrix, as in the following case tried at the Swansea Lent Assizes, 1869. A schoolmaster was charged with having committed a rape on a girl of 13 years of age. The child was unusually precocious for her age, and swore very distinctly to a rape having been completed. She made no complaint, however, for a week or ten days. On examination there was no mark of violence about her either recent or remote. The girl's story was inconsistent, and not supported by evidence. On cross-examination she said the prisoner committed the rape while they were standing up. The girl was short, and the prisoner, who was sixty years of age, was tall. She was quite sure that she was never placed on the ground. She resisted all she could, but could not help herself. Her statements of the mode in which the act was perpetrated, involved so many inconsistencies and improbabilities that the jury rejected it and acquitted the prisoner.

Defloration. Signs of virginity.—It will be necessary to say a few words respecting the *signs of virginity*,—a subject upon which, in some medico-legal works, a great amount of poetical discussion appears to me to have been wasted. Independently of cases of rape, this question may occasionally assume a practical bearing in relation to the signs of defloration. In civil cases a medical witness may be asked whether a woman has ever had intercourse or not; and proof of the fact may be necessary in order to confirm or rebut statements made by her in evidence. The question may be not whether a female has had a child, for this would resolve itself into a proof whether delivery had or had not taken place:—it may be limited to the probability or possibility of intercourse on her part, at some antecedent period. Now, a medical jurist, when consulted in such a case, can only be guided by the presence or absence of the external signs of virginity. The hymen may be intact, but this does not prove non-intercourse, because females have been known to conceive with the hymen uninjured; and an operation for a division of this membrane has been frequently rendered necessary before delivery could take place. (Henke's 'Zeitschrift der S. A.' 1843, 2, 149.) Two cases of impregnation without rupture of the hymen are reported in the 'New Orleans Medical Gazette,' for June 1858 (pp. 217, 220). The hymen in each case required to be divided to allow of the delivery of the child. Another case is reported in the 'Amer. Jour. Med. Sci.' for April 1859 (p. 576). These facts may be explained by the membrane being hard and resisting, and at the same time small in extent, *i.e.* only partially closing the vagina. Under opposite conditions, the persistence of this membrane might fairly lead to the inference that the female was chaste, and that there had been no intercourse; but the hymen may be destroyed by ulceration, as a result of inflammation of the genital organs. When the membrane has been thus destroyed by disease or other causes, or

when it is congenitally absent, a medical opinion must be more or less conjectural; for one intercourse could hardly so affect the capacity of the vagina, as to render the fact evident through life, and there is no other datum upon which an opinion could be based. The presence of the hymen is of course quite incompatible with the assumption that the female has borne a child. A question of this kind incidentally arose in *Frazer* v. *Bagley* (Common Pleas, Feb. 1844). It was alleged by defendant that the plaintiff, a married man, had had adulterous intercourse with a young woman, and that at an antecedent period she had left her home for the purpose of giving birth to a child privately. The late Dr. Ashwell was called upon to examine the woman, and he deposed that, in his opinion, she was a virgin, and had never had a child. In spite of this evidence, the jury returned a verdict for the defendant. It is possible, however, that abortion may take place at the early periods of pregnancy, without the necessary destruction of the hymen. (See Henke's 'Zeitschrift,' 1844, 1, 259.)

The question may become of importance not only as it may affect the reputation of a female, but the credibility and character of the person who makes the imputation of a want of chastity. In 1845, a gentleman, then assistant-surgeon in the Bombay Army, was brought to a Court-Martial on a charge of having deliberately and falsely asserted that on several occasions he had had connection with a native woman. This was denied by the woman, and evidence was adduced to show that she had still what is commonly regarded as the main sign of virginity, namely, an unruptured hymen. In consequence of this, the gentleman was found guilty, and cashiered. The woman was at the time about to be married, and this rendered the investigation all the more important to her. An assistant-surgeon, who examined the girl, deposed that he found the membrane of a semilunar form, and tensely drawn across the vagina; and his evidence was corroborated by that of a midwife. The inculpated person took up a double line of defence—1st, that the examination of the woman was incomplete; and 2ndly, that the hymen, if present, would not justify the witness in saying that intercourse could not possibly have taken place. On the first point, it is unnecessary here to make a remark; but it appeared, from their own admissions, that the witnesses had never before examined women with this particular object. Assuming that there was no mistake, it became a question whether non-intercourse could in such a case be inferred from the presence of the membrane. Fruitful intercourse, it is well known, may take place without rupture of the hymen. Some instances of this kind were referred to at the Court-Martial; but such cases are usually regarded as of an exceptional nature. The real question is, whether, unless the hymen be in an abnormal state, intercourse can possibly occur between young and active persons without a rupture of this membrane. Intercourse is not likely to be confined, under these circumstances, to a mere penetration of the vulva. The membrane in this woman is stated to have been tensely drawn across the canal, and it was not tough; it was therefore in a condition to render it most easy for rupture. In the case of an old man, or of one of weak virile power, vulval intercourse might be had without destroying the membrane; but such a case could only be decided by the special circumstances which accompanied it. The presence of the hymen unruptured, affords a presumptive but not an absolute proof that the woman is a virgin; and if the membrane is of ordinary size and shape, and in the ordinary situation, it shows clearly that, although attempts at intercourse may have been made, there can have been no vaginal penetration. Admitting the statements of the examiners to be correct, it is improbable that this woman had had sexual intercourse several times, or even on one occasion; hence the imputation on her chastity was unfounded.

In the case of *Delafosse* v. *Fortescue* (Exeter Lent Ass. 1853), which in-

volved an action for defamation of character, the plaintiff, a married man æt. 64, had been charged with committing adultery with a certain woman. Several witnesses for the defendant positively swore that they had seen these persons in carnal intercourse. This was denied by the plaintiff; and, as an answer to the case, medical evidence was tendered to the effect that the woman with whom the adulterous intercourse was alleged to have taken place had been examined, and the hymen was found intact. In cross-examination, however, this was admitted not to be a conclusive criterion of virginity, and a verdict was returned for the defendant. The form and situation of the hymen in this case were not described; but it is to be presumed that these were not such as to constitute a physical bar to intercourse, or this would have been stated by the medical witness. Hence the existence of the membrane was not considered to disprove the allegations of eyewitnesses. In Scotland this kind of medical evidence is not admissible. I am indebted to Mr. Trayner, a member of the Scotch Bar, for the subjoined case, in which a wife sued the husband for divorce, on the ground, *inter alia*, that he had committed adultery with C. In defence the defendant denied the adultery, and adduced C. as a witness, who swore that such connection had never taken place. She also swore that she had submitted to an *inspectio corporis* by Professor Simpson. The defendant then proposed to examine Dr. Simpson, that he might speak to the result of his examination. He argued that this was the best evidence that he could adduce in support of his innocence, as if the girl was still a virgin the adultery alleged could not have been committed. The Court refused to admit the evidence, on the ground that the evidence proposed was merely that of an opinion from the learned professor; that other medical men might differ from him in opinion, even from the same observations; and that, as the Court could not compel C. to submit to another examination, the proposed evidence must be considered *ex parte* and inadmissible. (Sessions Cases, Edinburgh, Feb. 11, 1860.) In *Hunt* v. *Hunt* a verdict was obtained at common-law against the alleged paramour in a case of adultery, and the damages were assessed at 50*l*. It was subsequently proved that the lady was *virgo intacta!* So long as there are facts which show that women have actually conceived with the hymen still in its normal state, it is inconsistent to apply the term 'virgo intacta' to women merely because this membrane is found entire. A woman may assuredly have an unruptured hymen, and yet not be a virgo intacta. This can only be decided by the special circumstances proved in each case. Such *virgines intactæ* have frequently required the assistance of accoucheurs, and in due time have been delivered of children! ('Amer. Jour. Med. Sci.' April 1873, p. 560.) A similar question arose in *Reg.* v. *Harmer* (C.C.C. June 1872). Prisoner was indicted for perjury. He was a waiter at a tavern, and being called as a witness in a divorce suit, swore that he had seen one of the parties in adulterous intercourse on more than one occasion. The lady with whom the adultery was alleged to have been committed, denied this on oath, and Dr. R. Lee and another medical expert gave evidence that they had examined this lady, and found her to be a virgo intacta. The Recorder, in summing up, told the jury that this evidence was of the highest importance, and it was for them to consider whether it was sufficient to satisfy them of the guilt of the prisoner. He was found guilty and sentenced to imprisonment.

CHAPTER 86.

RAPE ON ADULTS—ON MARRIED WOMEN—CIRCUMSTANCES UNDER WHICH IT MAY BE PERPETRATED ON ADULT WOMEN—LOSS OF PHYSICAL EVIDENCE—PREGNANCY FOLLOWING RAPE—MICROSCOPICAL EVIDENCE—EVIDENCE OF VIOLATION IN THE DEAD BODY.

RAPE ON ADULTS.

THE remarks already made apply generally to married women, with this difference,—that when a woman has already been in habits of sexual intercourse, there is commonly much less injury done to the genital organs. The hymen will, in these cases, be found destroyed and the vulva dilated. Still, as the intercourse is presumed to be against the consent of the woman, it is most likely that when there has been a proper resistance, some injury will be apparent on the pudendum; and there will be also, probably, extensive marks of violence on the body and limbs. These cases are generally determined without medical evidence by the deposition of the woman, corroborated, as it should always be, by circumstances. An experienced barrister has suggested to me that this statement regarding the presence of *marks of violence* on the pudendum of a married woman, on whom a rape is alleged to have been committed, requires some qualification. He informed me that he was concerned in the prosecution of two cases of rape on married women, in which the crime was completed in spite of the resistance of the women, and there were no marks of violence on the genital organs in either case. In one (*Reg.* v. *Owen* and *others*, Oxford Circuit, 1839), it appears that while an accomplice held the head of the woman with her face downwards between his thighs, the prisoner had forcible intercourse with her from behind,—her thighs having been first widely separated. In the second case an accomplice held the woman down on a bed by her neck, while the prisoner separated her thighs, and thus had intercourse with her. She was examined nine hours afterwards by an experienced surgeon, and he found no mark or trace of violence or injury on or anywhere near her pudendum. There were bruises on her arms, neck, and legs, where she had been forcibly held down. In each of these cases, it will be seen that the woman had not to struggle with a single assailant; and there can be no doubt that if a married woman is rendered powerless by many persons being combined against her, or if she is rendered insensible by intoxicating drinks or narcotic vapours, a rape may be perpetrated without any injury whatever to the genital organs. The gentlemen to whom I am indebted for the above cases has suggested that a separation of the thighs in a married woman will cause such a dilatation of the parts, as to render it easy for the male organ to penetrate the vagina without leaving any traces of violence on the labia or the female organs generally. This is undoubtedly the true explanation.

On the other hand, the vagina may be the seat of violence, and no marks to indicate a struggle or the application of force be found on the body. I was consulted, in April 1862, on a case of this description. A woman was knocked down, her clothes were pulled over her face, and the crime of rape was perpetrated by the assailant. In the position in which she was held, with her arms and hands covered over, she was half-suffocated and unable to offer any effectual resistance. She was examined on the evening of the day of the assault by Dr. Mayne. He found no marks of violence on her body, but the mucous membrane of the vagina at its commencement was contused, and in some portions lacerated; blood was oozing from these parts. It was properly considered that, under these circumstances, the statement of the woman was consistent with the fact that there were no marks of violence on her body. There was no reason

to suppose that the injury to the vagina had been caused in any other way than by a criminal assault.

When a charge of rape is made by a prostitute, it is justly received with suspicion, and the case is narrowly scrutinized. Something more than medical evidence would be required to establish a charge under these circumstances. The question turns here, as in all cases of rape upon adult women, on the fact of *consent* having been previously given or not. This is the point at which the greater number of these cases of alleged rape break down; and it need hardly be observed, that this question has no relation to the duties of a medical witness:—all that he can do is to establish, occasionally, whether or not sexual intercourse has been had with or without some violence. It is obvious that there may be marks of violence about the pudendum or on the person, and yet the conduct of the woman may have been such as to imply consent on her part: we must not suppose that medical proof of intercourse is tantamount to legal proof of rape.

Possibility of perpetrating rape on adult women.—Some medical jurists have argued that a rape cannot be perpetrated on an adult woman of good health and vigour; and they have treated all accusations made under these circumstances as false. Whether, on any criminal charge, a rape has been committed or not, is of course a question of fact for a jury and not for a medical witness. The fact of the crime having been actually perpetrated, can be determined only from the evidence of the prosecutrix and of other witnesses; still a medical man may be able to point out to the Court circumstances which might otherwise escape notice. Setting aside the cases of infants, idiots, lunatics, and weak and delicate or aged women, it does not appear probable that intercourse could be accomplished against the consent of a healthy adult, except under the following conditions:—

1. When narcotics or intoxicating liquids have been administered to her, either by the prisoner or through his collusion. It matters not, in a case of this kind, whether the narcotics have been given merely for the purpose of exciting the female, or with the deliberate intention of having intercourse with her while she was intoxicated,—the prisoner is equally guilty. (See *Reg.* v. *Camplin*, 'Law Times,' June 28, 1845; also 'Med. Gaz.' vol. 36, p. 443.) The nature of the substance whereby insensibility is produced is of course unimportant. Thus the vapours of ether and chloroform have been criminally used in attempts at rape. In a case which occurred in France, a dentist was convicted of a rape upon a woman, to whom he had administered the vapour of ether. The prosecutrix was not perfectly unconscious, but she was rendered wholly unable to offer any resistance. ('Med. Gaz.' vol. 40, p. 865.) A dentist was recently convicted of rape under somewhat similar circumstances in the United States, but it was thought that the woman had made the charge under some delusion. In *Reg.* v. *Snarey* (Winchester Lent Assizes, 1859), there was a clear attempt at fraud. The prosecutrix asserted that she was *instantly* rendered insensible by the prisoner forcibly applying a handkerchief to her face, and she accused him of having committed a rape upon her. The charge was disproved by a distinct alibi, as well as by the improbability of all the circumstances. Casper met with a solitary case in which a girl æt. 16 accused a man of having had intercourse with her while she was sleeping in her bed, of which she was not conscious until he was in the act of withdrawing from her. On her own statement she was *virgo intacta* up to the date of this occurrence. Upon the facts of the case, Casper came to the conclusion that, if her statement was true, the man could not have had intercourse with her without causing pain and rousing her to a consciousness of her position. The hymen was not destroyed, but presented lacerations in two places. This and other facts

showed that there had been intercourse, but did not prove that this had taken place without the consciousness of the woman. ('Klinische Novellen,' 1863, p. 31.) In *White* v. *Howarth* (Liverpool Winter Assizes, 1861), it was alleged that the defendant's daughter having gone to consult the plaintiff, who was a dentist, he took an opportunity of rendering her suddenly insensible by chloroform, and then had intercourse with her. In cross-examination, however, it transpired that the girl was not rendered insensible at all, but was conscious of all that was going on, and she might have given an alarm but did not. Most of these stories when properly examined will be found inconsistent and untrue. It is not the property of chloroform or of any narcotic substance, in a non-fatal dose, to render a person instantaneously insensible and powerless. In *Bromwich* v. *Waters* (Chester Lent Assizes, 1863, p. 256, *ante*), it was alleged on the part of the plaintiff, that the defendant had given to the woman Whalley some liquid, which she had only tasted, and then suddenly became unconscious. It was suggested that while in this state the defendant had had intercourse with her, which he denied; the woman herself alleged that she was not conscious of her pregnancy until some months after this visit. But such symptoms could not be reasonably ascribed to any of the known narcotic substances. If given in a non-fatal dose their effects are slowly and gradually produced; if they come on in a few minutes, the dose must have been large, and then it is probable the person would die.

When the state of unconsciousness arises from natural infirmity, as in idiocy or insanity, carnal intercourse with a woman is regarded as rape. (*Reg.* v. *Ryan*, Cent. Crim. Court, September 1846.) The woman was in this case an idiot, and it was proved that her habits were not loose or indecent. Platt, B., held that if she was in a state of unconsciousness at the time the connection took place, whether it was produced by any act of the prisoner or by any act of her own (?), anyone having intercourse with her would be guilty of rape. The prisoner was convicted. In a more recent case, *Reg.* v. *Fletcher* (Crown Cases Reserved, May 1866), in which the prisoner had been convicted of rape on an idiot, the Chief Baron delivered the judgment of the Court to the following effect:—This was an indictment for a rape upon the prosecutrix, who was an idiot. The prisoner had admitted the intercourse, but added that it was with consent. The point had been reserved for the purpose of ascertaining whether this was such an offence that the prisoner could be convicted of it. No doubt there was the clearest evidence that an offence had been committed, but, it was said, with the consent of the prosecutrix. The Crown had given no evidence that the act was done against her will, which was the allegation in the indictment. The Court considered that as no such evidence was given, the prisoner ought not to have been convicted. Conviction quashed. It would seem, therefore, that an idiot may, under certain circumstances, give consent which will exonerate the accused.

In *Reg.* v. *Baker* (C. C. C., Sept. 1872) the prosecutrix, æt. 17, alleged that she did not consent to the act, and evidence was given to show that she had been suffering from *hysteria* and was in a fit at the time that the act was perpetrated. The prisoner was convicted. Cases in which hysteria is pleaded as the cause of unconsciousness should be regarded with great suspicion. It is easy for a girl who has given her consent and repented, to make a plea of this kind. A medical man is bound to see in these cases whether there is any evidence of force or marks of violence on the person or genitals.

In *Reg.* v. *White* (Northampton Winter Assizes, 1856), the learned judge, in charging the jury, stated that some doubts were entertained whether the crime of rape could be committed (in law) on the person of a woman who had rendered herself perfectly insensible by drink, so as to be unable to make

any resistance: he thought it could not be alleged as an excuse for the man. The question was not reserved, as the prisoner was acquitted of rape, and found guilty of an indecent assault.

It may be a question whether a man can have intercourse with a woman without her knowledge while in a state of *unconsciousness from natural sleep.* A man was charged with rape before a police-magistrate, and the prosecutrix swore that he had effected his purpose during her sleep. The bare possibility of the offence being perpetrated under these circumstances cannot be denied; but this admission could only apply to a case in which the woman had been accustomed to sexual intercourse, and in which the sleep was unnatural or lethargic. In this instance the woman was a prostitute, and the charge improbable. A respectable married woman who had had children, the wife of an innkeeper, threw herself on her bed with her clothes on, late one evening, and fell fast asleep. She was first awakened by finding a man upon her body, in the act of withdrawing from her. This man, *William McEwan*, a servant in the house, was given into custody on a charge of rape. In the first instance he did not deny the act, and there was no reason to believe that the prosecutrix was aware of the prisoner's conduct until the crime was completed, and she was awakened in the manner described,—apparently by the weight of the prisoner's body. The prisoner was convicted, and sentenced to ten years' penal servitude. ('Edin. Month. Jour.' December 1862, p. 370.) A case which may serve to throw a little light upon this question occurred to Casper ('Gerichtliche Medicin', vol. 2, p. 574). A married woman alleged that a man had had intercourse with her while in bed, and when she was asleep. In her deposition, however, she admitted she was conscious that some one was lying upon her, and that she asked who it was: showing, as Casper remarks, that she had a knowledge of what was going on, and a *doubt* whether the person was her husband.

In reference to the question whether it is possible to commit rape upon a woman while asleep, a majority of the Scotch judges recently decided, in the case of *Sweenie* ('Irvine's Justiciary Reports,' vol. 3, p. 109), that the feloniously having connection with a woman while asleep was not indictable under the name of rape, inasmuch as, apart from the force implied in the act of connection, there was no force used to overcome the will of the woman. But they held, however improbable it might be, it was quite possible that a man might have connection with a woman while asleep. ('Edin. Month. Jour.' December 1862, p. 570.)

The condition of the so-called *magnetic* or unnatural sleep has given rise to a question connected with the alleged perpetration of rape. A girl (æt. 18) consulted a therapeutic magnetizer as to her health. She visited him daily for some days. Four-and-a-half months afterwards she discovered that she was pregnant, and made a complaint to the authorities against the magnetizer. They directed a physician and surgeon to determine the date of her pregnancy, and whether complainant might have then been violated and rendered pregnant contrary to her will, *i.e.* if her volition could have been completely or partially annihilated by magnetism. The medical inspectors were satisfied that the pregnancy did not extend farther back than four-and-a-half months; and founding their opinion on M. Husson's report, made to the Academy in 1831, concluded that, as a person in magnetic sleep is insensible to every kind of torture, sexual intercourse might then take place with a young woman without the participation of her will, and without her being conscious of the act, and consequently without her being able to resist the act consummated on her. This opinion was confirmed by that of Devergie. ('Gazette Médicale de Paris,' and 'Edin. Month. Jour.' December 1860, p. 566.) There is another view of this case which does not seem to have occurred to the French medical experts, namely,: '*Non omnes dormiunt quæ clausos habent oculos.*'

The state of the mind during the act of waking from natural sleep, *i.e.* when a person is in a half-conscious state, may also give rise to a question connected with rape. In *Reg.* v. *Clarke* (York Autumn Assizes, 1854), prisoner was charged with having committed a rape on prosecutrix. The woman had been married to her husband six years, and had had three children. Prisoner took advantage of his absence from home to get into the bed of the prosecutrix, about two o'clock in the morning: she mistook him for her husband, and under this mistake allowed him to have intercourse with her. It was only some time afterwards that she found it was the prisoner, and not her husband, who was in bed with her. The jury convicted him on this evidence. The case was reserved by Crowder, J., for the opinion of the judges whether the offence amounted to rape, as it was not included in the ordinary definition, *i.e.* of carnal knowledge by force and against the will of the woman. In *Reg.* v. *Rackstraw* (Cent. Crim. Court, 1863), and *Reg.* v. *Jackson*, in both of which intercourse had been had with women under similar circumstances, it was held that the offence did not in law amount to the crime of rape. In the former case, the prisoner was tried and found guilty of an unlawful assault on the prosecutrix. Keating, J., then stated, that where a man personated the husband, the act of intercourse did not amount to rape, because it was done with the assent of the woman. The prisoner, in his defence, stated that the intercourse had taken place by the woman's consent, and that she had invited him; but this she denied, and the circumstantial evidence in the opinion of the Court tended to negative the prisoner's statement: he was convicted of an assault and sentenced to imprisonment. It is a curious psychological question, however, whether a woman can have connection, under these circumstances, without at least entertaining a suspicion that the man is *not* her husband. It is a matter of great doubt, when intercourse has thus been had in a waking state, whether the act could take place without the tacit assent of the woman.

2. A rape may be committed on an adult woman if she falls into a state of syncope, or is rendered powerless by terror and exhaustion. An eminent judicial authority has suggested to me that, in his opinion, too great distrust is commonly shown in reference to the amount of resistance offered by women of undoubted character. Inability to resist from terror, or from an overpowering feeling of helplessness, as well as horror at her situation, may lead a woman to succumb to the force of a ravisher, without offering that degree of resistance which is generally expected from a woman so situated. As a result of long experience, he thinks that injustice is often done to respectable women by the doctrine that resistance was not continued long enough.

3. When several are combined against the female, in which case we may expect to find some marks of violence on her person, if not on the genital organs.

4. A woman may yield to a ravisher, under threats of death or duress: in this case her consent does not excuse the crime, but this is rather a legal than a medical question. An aged woman can scarcely be expected to resist a strong man. Dr. Chevers mentions a case in which a man was convicted of rape and an aggravated assault on a woman of *seventy* years of age.

Loss of physical evidence.—It is necessary to observe, in relation to the examination of females, whether girls or women, that the indications of rape, however well-marked they may be in the first instance, either soon disappear or become obscure, especially in those who have been already habituated to sexual intercourse. After two, three, or four days, unless there has been an unusual degree of violence, no traces of the crime may be found about the genital organs. In the case of an adult married woman examined by Dr. Mayne, the appearances of injury which he discovered in and about the vagina had begun to heal in less than forty-eight hours; but in a case examined by Casper, on the ninth day

the lining-membrane of the vagina was still reddened, and the parts were painful. In this case the hymen was completely torn through. ('Gerichtliche Medicin,' vol. 2, p. 157.) In married women, or in those accustomed to sexual intercourse, no inference can be drawn from a dilated state of the vagina. In unmarried women, and in children when there has been much violence, the signs of rape may persist and be apparent for a week or longer. Supposing that they are not found at the period of examination, it may be necessary to consider whether there has been time for them to disappear since the alleged perpetration of the offence; but in such cases it is rarely in a witness's power to express an affirmative opinion of the perpetration of the crime; he must leave this to be proved by the general and circumstantial evidence. Casper met with a case in which a man, æt. 37, committed a rape on a girl only eight years of age: he was seen in the act, and defended himself on the plea of drunkenness. The girl was examined by a medical man on the day following,—the labia were reddened, and there was injection of the membrane at the entrance of the vagina, which was very sensitive. As an illustration of the rapidity with which the marks of rape disappear in young children, when not attended with great physical injury, it may be stated that this girl was carefully examined by Casper *eleven days* after the assault. The sexual organs were then in their natural state; there was not the least appearance of local injury, and no inference could have been drawn at this date, that the girl had been subjected to any violence.

Medical practitioners are not always sufficiently careful in the inferences which they draw from an examination of children at distant periods after an alleged rape. They allow themselves to be deceived by a plausible story, apparently consistent, and thus see proofs of rape on examining the sexual organs of a girl many weeks after the alleged perpetration of the crime; whereas, had the girl been brought before them as a casual patient, and they had heard nothing of violent intercourse, they would have probably ridiculed the idea of setting up a charge of rape on so slender a foundation. The delay in having the examination made, unless satisfactorily explained, is always a suspicious circumstance in itself. I was present at the Assizes on one occasion, when a man was tried on a charge of rape on a girl a little above seven years of age. About *six weeks* had elapsed before the girl was seen and examined by the medical man who was the only witness for the prosecution; and after this long date he was prepared to swear, at the trial, that a rape had been perpetrated on the child! Fortunately for him, the prosecutrix, as usual, was first called as a witness. The child, under cross-examination, swore that all that she had previously stated before the magistrates regarding the prisoner was untrue; and her evidence so clearly established the innocence of the man, that the case broke down, and he was at once acquitted by the jury. But for the medical evidence against him, this man could not have been committed for trial on the charge; and it is therefore desirable to consider the medical facts and opinions on which he was imprisoned for a long period on what proved to be a false charge. From his examination the medical man came to the conclusion that the girl had been violated six weeks before he saw her. There had, in his opinion, been penetration; the vagina was unnaturally dilated; there was a discharge from it, and an abrasion on the left side; the mucous membrane was generally inflamed. "Such appearances might have existed as the result of violence perpetrated on them three months previously! He had frequently examined the girl since, and his conclusions from the first examination had been confirmed. In cross-examination he said he thought the appearances could not be the result of any accident or disease; it was not impossible but improbable that they might be so." From what has been already stated on the medical proofs of rape, it will be obvious—1. That in this case there was no

evidence of penetration by the male organ, and that the appearances after six weeks had elapsed, did not in any way justify such an opinion from an examination then made.—2. That the discharge, the abrasion, and the inflammation of the vagina were all explicable on other grounds, and did not prove that a rape had been committed on the girl at the date assigned. It is highly probable that this child was suffering under that kind of inflammation and purulent discharge from the genital organs which has been elsewhere described as a fertile source of medical errors (p. 453, *ante*); but whether this be admitted or not, there was not the slightest proof, from the facts, that this girl had ever been violated, even supposing that her own evidence had not shown that the medical man had come to a wrong conclusion from the data before him. Dilatation of the vagina, if really present, could not have been the result of only one attempted intercourse with a child of such tender years, six weeks before the date of examination.

When there has been great laceration of the sexual organs, then certain appearances in the form of cicatrices may remain; but in all cases great caution should be observed in giving an opinion of rape having been perpetrated, from an examination made even two or three weeks after the alleged commission of the offence. Any innocent person might be convicted of rape upon loose medical evidence such as this, given after the lapse of six weeks from the date of the occurrence. Marks of violence on the person can never establish a rape; they merely indicate, *cœteris paribus*, that the crime may have been attempted.

Pregnancy following rape.—It was formerly a debated question, whether, in a case of real rape, pregnancy could possibly follow; and this was even proposed as a rude test of the truth of a charge made by a woman! This question scarcely requires discussion. Such a defence would not be admitted as an answer to a charge of rape, or to show under any circumstances that intercourse had been voluntary on the part of a woman. Conception, it is well known, does not depend on the consciousness or volition of a female. If the state of the uterine organs be in a condition favourable to impregnation, this may take place as readily as if the intercourse was voluntary: even penetration is not absolutely necessary for impregnation. (See case by Dr. Oldham, 'Med. Gaz.' vol. 44, p. 48.) I am indebted to the late Mr. Carrington for a case in which a woman became pregnant after a rape committed on her by a man who subsequently married her; the date of intercourse was accurately fixed, and a child was born after 263 days' gestation.

It has been supposed, that in these cases of pregnancy following rape, in spite of resistance at first, a woman may in the end have voluntarily joined in the act. I know of no ground for adopting this theory: the general opinion is, that conception may occur, and is neither accelerated nor prevented by the volition of the sexes. Many women in married life who anxiously wish for children have none, and *vice versâ*; and physical impediments do not suffice in all cases to explain these facts. Women are reported to have conceived during the states of asphyxia, intoxication, and narcotism. Dr. Ryan mentions a case in which a young woman became unconsciously pregnant from intercourse had with her by a man while she was in a state of intoxication, and in which it was clearly impossible that her volition could have taken any share. ('Med. Juris.' p. 245.) In married life there is no doubt that women frequently become pregnant against their will, and in a great number of cases without any consciousness of their condition until pregnancy is far advanced. Those who affirm that without the active will of the woman there can be no conception, must deny the existence of cases of impregnation in a state of unconsciousness (p. 157 *ante*): but the facts are too strong and too numerous to be met with a simple denial. A medical jurist, therefore, who

relied upon pregnancy following alleged rape, as a proof of *consent* on the part of the woman, and would infer from this result that the intercourse must have been voluntary on her part, would inflict great injustice by such an opinion. The extrusion of an ovum does not depend on the will of a woman, but is a periodical condition; the action of the spermatozoa on this ovum is as much removed from the will of the woman as it is from that of the man.

This subject would have hardly required so much notice, but for the fact that in some recent trials it has been put forward with a view to discredit the evidence of a woman, where pregnancy has followed intercourse in a state of alleged unconsciousness. Any statement of this kind always requires a close examination, because, generally, there is a strong motive for falsehood on the part of a woman. In the case of *Bromwich* v. *Waters* (*ante*, p. 256), the young woman Whalley had had a child, but stated that she had not been conscious of any intercourse. The fact that she had borne a child did not prove that her statement was false, although a suggestion to this effect was made. We may fairly doubt whether a woman could have intercourse unconsciously; but because impregnation follows, this is no proof that she is guilty of falsehood or perjury.

Microscopical evidence.—As part of the medical evidence in cases of rape, it may be necessary to examine *spots or stains* on the linen of the prosecutrix and the accused. ('Ann. d'Hyg.' 1854, p. 210: 1839, p. 134.) Cases of rape are commonly tried in this country without reference to this species of evidence; and it is not easy to perceive how this can be necessary to the proof of the crime in the living, when the present law of England demands only proof of penetration, and not of *emission*. (24 and 25 Vict. c. 100, s. 63.) Thus, a rape may be legally completed without reference to emission; and, medically speaking, it is quite possible that there might be marks of emission without any penetration. Admitting that certain stains of this description are found on the clothes of an accused person,—Are these to be taken as furnishing undeniable proof of the legal completion of rape? It appears to me that without corroborative evidence from the state of the female organs and from circumstances, they cannot be so taken.

The fact that spermatic stains are found on the linen of the prosecutrix may, however, become occasionally of importance in charges of assault with intent, as the following case (*Reg.* v. *Hamilton*) which was tried at Edinburgh, Nov. 27, 1843, will show. The prisoner, who was at the time labouring under gonorrhœa, was charged with a criminal assault upon a child. The shift worn by the prosecutrix, with other articles belonging to the prisoner, was submitted to Mr. Goodsir and Sir James Simpson for examination. Some of the stains on the linen were of a yellow colour, and were believed to be those of gonorrhœa; others, characterized by a faint colour and particular odour, were considered to be stains caused by the spermatic secretion. When placed in water, they yielded a turbid solution of a peculiar odour, and when this was submitted to a powerful microscope, spermatozoa were detected. The majority of them were mutilated, the long slender filaments being broken off; but perfect specimens were seen, which differed from the living spermatozoa only in being motionless. The stains on the linen of the prisoner and the prosecutrix were similar. The prisoner was convicted of an assault with intent to ravish, and sentenced to transportation for fourteen years. ('Cormack's Edin. Jour.' April 1844.) In a case of rape perpetrated on a child, Dr. Sawyer found in addition to blood-corpuscles and spermatozoa, some woollen fibres of a blue and red colour. This observation aided in fixing the identity of the assailant, since it was proved that the man wore a red flannel shirt over a bluish-grey woollen shirt. ('New Orleans Med. Gaz.' June 1858, p. 281.)

Examination of stains.—In nearly all cases the stained articles are presented

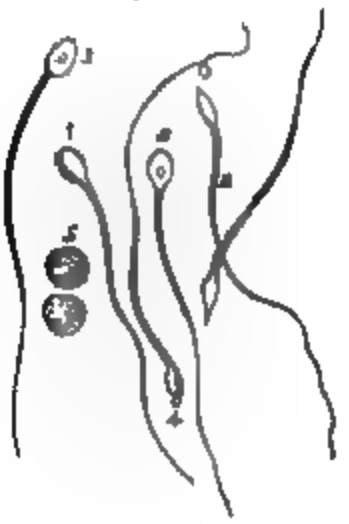
for examination in the dried state. It is rare that a case occurs in which a medical jurist is required to examine them while still liquid. There are no chemical tests on which we can safely rely for the detection of spermatic stains. The appearance produced by a dried stain on linen or cotton is like that produced by a diluted solution of albumen. The fibre of the stuff is stiffened, and the stain, particularly at the margin, has a slightly translucent appearance, as if wetted by diluted gum or albumen, but without any shining lustre. In the dry state the stain presents no well-marked colour or odour. Slips of the stained linen, when soaked in a small quantity of distilled water, yield a muco-albuminous liquid, opaline and slightly alkaline. It was long since noticed by Orfila that this liquid, unlike a solution of albumen, was rendered rather strongly yellow by diluted nitric acid. By the action of warm water, the stained linen, even although it may have been kept dry for a considerable period, has been observed to evolve the peculiarly faint odour of the spermatic secretion.

The microscopical detection of spermatozoa in dry stains is attended with some difficulty when the stained stuff has been much rubbed or worn, or is of a very coarse nature. M. Donné, in his early experiments, failed in discovering these bodies in dried stains. ('Cours de Microscopie,' p. 304.) This was probably owing to the faulty methods of proceeding adopted by some of the French medical jurists. Thus, they recommended that the stained linen should be soaked in so large a quantity of water as to require filtration; that it should be macerated for many hours; that warm water should be used; and that ammonia, or other chemical agents, should be employed. These circumstances will account for the non-detection of the minute fragile filaments, as they are liable to be destroyed by such methods of research. Chemical tests can only show the presence of an albuminous liquid. For a full account of this subject the reader is referred to the papers of Dr. Koblanck, 'Vierteljahrs.' 1853, 1, 140; of Dr. Pincus, 'Vierteljahrs.' 1866, 2, 347; and of M. Roussin, 'Ann. d'Hyg.' 1867, 1, 143, 462.

The stained linen, or a part of it, should be cut into small pieces, taking care that it is not roughly handled. These should be placed in a small porcelain capsule or watch-glass, with a sufficiency of cold distilled water (eight or ten drops) to soak it thoroughly, and to allow the fibre of the stuff to become quite penetrated by the water. It is advisable not to move the stuff or agitate the liquid, but to allow it to be quietly imbibed. The watch-glass or capsule should be covered with another to prevent evaporation and to keep out foreign matters. After an hour the fibres may be turned and allowed to macerate for another hour. The stained linen may then be removed, and the soaked fibres of the stuff gently pressed on several glass slides, already well cleaned and prepared for the purpose. The liquid thus obtained by pressing the stained linen is slightly opaline. It should now be covered with thin microscopic glass, and examined by a microscope under powers varying from 300 to 500 diameters, in a strong light. At 319 diameters the spermatozoa are visible, but owing to their great transparency require a careful adjustment of the microscope in order to be distinctly seen; the head often coming into focus before the long filamentous tail, and when this is seen the head may be lost. The spermatozoa are best seen in a good light, with a power of 500 diameters: the head is ovoid and flattened—sometimes rather pointed; the tail is from nine to twelve times the length of the head. Micrometrical measurements of two gave, for the total length including the head—in one the 1-750th of an inch, and in the other the 1-1000th of an inch; the head, in its greatest diameter, was in each about 1-9000th of an inch; the filiform tail tapers to a scarcely visible point. The spermatozoa are usually associated with granular bodies, and with epithelial scales (see fig. 179). Fibres of cotton, linen, or

wool, and other substances, may be also mixed with them; and they may be associated with pus, mucus, and blood-globules. Their form is so peculiar that, when once well seen and examined, they cannot be mistaken for any other substance, vegetable or animal, nor, with ordinary care, can any vegetable fibres be mistaken for them. In the annexed illustration (fig. 179), the forms

Fig. 179.



Spermatozoa and seminal granules (Sharpey).

Fig. 180.

Spermatozoa in stains after two years (Gosse) magnified 500 diameters.

of the spermatozoa are delineated: in 1 to 4 their variety of appearance is shown; 5, seminal granules. Fig. 180 represents the appearance of the reproduced spermatozoa in a stain which had been two years in a dried state; the rounded bodies represent fatty granules associated with the spermatozoa. (See 'Des Taches au point de vue médico-légale,' par Dr. H. J. Gosse, 1865, p. 94.)

In these investigations medical evidence should be based on the undoubted detection of a perfect spermatozoon with its head and long filamentous tail. Owing to the tenuity and transparency of the tail in liquids, it cannot be seen so readily as the head. Minute fibres might be mistaken for the tails, and therefore it is desirable not to base an opinion on fragmentary evidence of this description. Dr. Beale has published a case in which bodies closely resembling spermatozoa were found in the urine of a woman, a patient in St. George's Hospital. ('Archives of Medicine,' No. 3, 1858, p. 251.)

Dr. Koblanck expresses the opinion that when they are not discovered by the process above described, it may be considered that the stains are not due to the spermatic secretion: in this, however, he is in error. When the stained article of dress is of very coarse texture, when it has been much rubbed, much worn, or wetted by urine, blood, mucus, or pus, it will be a matter of considerable difficulty to discover these bodies, although there may really have been spermatic stains upon it. Most of these foreign substances, however, may be removed by the addition of one or two drops of acetic acid, which exerts no dissolving action on the bodies of the spermatozoa unless too concentrated. There are many circumstances which may account for the non-detection of spermatozoa. These have been fully explained by M. Roussin. ('Ann. d'Hyg.' 1867, 1, 154.) In some cases too low a power of the microscope has been used, and probably a bad light. M. Roussin advises the use of a power magnifying from 400 to 500 diameters.

In order to render the spermatozoa more distinct under the microscope, M. Roussin has recommended the employment of a solution of iodine in water. Iodine does not alter the size or shape, but causes the bodies to appear in stronger relief. The proportions of the ingredients which he recommends are iodine one part, iodide of potassium four parts, water one hundred parts by

weight (op. cit. p. 156). Iodine thus used gives a strongly marked yellow colour to animal and vegetable substances, while it does not alter mineral matters. It brings out the form of the spermatozoa in colour. He has not found that the act of drying in any way alters or modifies the forms of the spermatozoa.

Starch, it is well known, is rendered blue by iodine. As stained articles of dress sent for examination may contain starch used for washing purposes, the liquid may acquire a bluish colour on the addition of iodine, forming a strong contrast with those bodies which are turned of a yellow colour by iodine. In one case in which M. Roussin was required to examine spermatic stains on a dress in a case of alleged rape, he was surprised to find, on the application of iodine, that there were distinct unbroken granules of wheat starch and potato starch of a deep-blue colour. These could not have been derived from the starch used in washing, as the granular structure is there destroyed, and further the granules were found only in the spermatic stains and not on other parts of the linen. It turned out on inquiry that the man used flour in his business—that there was an open sack of flour at the foot of the bed on which he had committed a rape with the little girl—some of this had been spilled in the struggle, and had adhered to the stains on his shirt. The flour in the sack when examined proved to be a mixture of wheat flour and potato starch. This discovery furnished strong evidence against the prisoner at the subsequent trial. ('Ann. d'Hyg.' 1867, 1, 163.) Dr. Pincus has adopted another method of rendering these transparent bodies more visible. He discovered accidentally, on re-examining a slide on which the watery solution of a spermatic stain had been allowed to dry spontaneously, that many of these bodies which were only indistinctly seen while moist, were now very prominent and distinct in their forms, and those which before appeared tailless now assumed their complete shape and length. They became in fact more opaque and distinct by drying. On repeating the experiments, he found the results satisfactory; but the drying should take place slowly, *i.e.* by covering the liquid on the slide with the microscopic glass and keeping it in a cool place. (Casper's 'Vierteljahrs.' 1866, 2, 349.) In this way specimens may be prepared and reserved for evidence if necessary.

As it has been elsewhere stated (*ante*, p. 290), spermatozoa, although peculiar to the seminal fluid, are not found in the very young, the very old, or in those who are labouring under long-standing disease of the testicles. Even in the cases of healthy married men, who have had children, spermatozoa are not always found in the spermatic secretion; their presence, size, and number are subject to great uncertainty. Exhaustion from frequent intercourse, or constitutional causes, without actual bodily disease, appears to influence their production. There are also various other conditions in which they are not found; these have been fully examined by Casper ('Gerichtliche Medicin,' vol. 2, p. 141), and the numerous cases which he has collected clearly establish this conclusion. The discovery of spermatozoa in stains on articles of clothing demonstrates that the stains have been produced by the spermatic liquid; but their non-discovery, under these circumstances, does not prove that the stains have not been caused by this liquid. Dr. Koblanck's views on this subject are therefore not borne out by facts.

There can be no doubt that a crypsorchid is capable of committing a rape. According to some observers (p. 293), the spermatic fluid emitted by a crypsorchid contains no spermatozoa. In some instances this is no doubt the case, but as a rule we may expect to find that stains produced by the spermatic fluid of such persons would present the usual characters under the microscope. At page 294 cases have been related which clearly prove that crypsorchids can procreate like normally-constituted men, and Casper furnishes an instance in

which spermatozoa were detected by him in the fluid emitted by a crypsorchid, ('Gerichtliche Medicin,' vol. 2, p. 187.) The case is otherwise remarkable from the fact that the crypsorchid boy was only fourteen-and-a-half years old, and had been guilty of unnatural conduct towards another boy eight years of age; sixteen days after the act spermatozoa were detected by Casper in stains upon his shirt.

In addition to the other facts mentioned respecting their microscopical characters, it may be remarked that the spermatozoa move for many hours out of the body when kept at a temperature of 98°, and they even retain their rapid motions when the spermatic liquid is mixed with water; but these motions cease immediately on the addition of urine or chemical reagents. According to Müller, the spermatozoa may retain vitality (or free motion) in the body of a woman for the period of seven or eight days, and even longer. When this vitality, indicated by free motion, has disappeared, the properties of the seminal fluid are destroyed, and there is reason to believe that it no longer possesses a fecundating power.

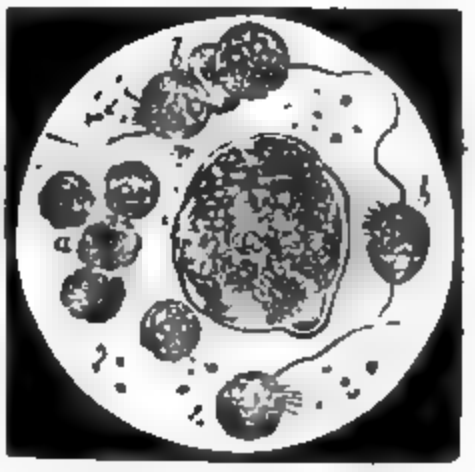
The detection of dead or motionless spermatozoa in stains may be made at long periods after emission, when the fluid has been allowed to dry. In three cases, at intervals of from one week to seven weeks after the perpetration of the crime, Casper was enabled to demonstrate the presence of spermatozoa on articles of clothing, and thus to furnish corroborative evidence. (Op. cit. vol. 2, p. 161.) Dr. Koblanck made experiments on this subject, in reference to different periods of time; he found these bodies distinctly, after three days, one month,—three, four, six, nine, and even twelve months. The number of distinct and perfect bodies diminished according to the length of the period at which the examination was made. Thus, at the end of a year, only two perfect specimens could be perceived; but it may be stated, that the discovery of one distinct and entire spermatozoon is quite sufficient to justify a medical opinion of the spermatic nature of the stain. (See fig. 180, p. 466.) M. Bayard states that he has been able to detect spermatozoa in dry stains after six years! ('Man. Prat. de Méd. Lég.' p. 277), and M. Roussin after the long period of eighteen years ('Ann. d'Hyg.' 1867, 1, 152). The act of drying does not in any way alter or affect the form, shape, or size of the spermatozoa.

A medical witness must be prepared to consider the precise value of evidence furnished by the microscope in the examination of stains on the dress of a man accused of rape. A shirt may present stains of blood, urine, mucus, or gonorrhœal discharge, some of which, but for the microscope, might be mistaken for spermatic stains. Admitting that, by the process above described, the microscope enables an examiner to affirm that the stains have really been caused by the spermatic secretion, this does not prove that a rape has been committed, or even that intercourse has been necessarily had with a woman. Such stains may arise from spontaneous natural discharge, or from disease (spermatorrhœa), and therefore in themselves they afford no proof of intercourse. If, from other circumstances in the case, it should be clearly and satisfactorily proved that there has been intercourse, then the presence of blood mixed with the spermatic stains might, in certain cases, justify an opinion that violence had been used. The discovery of spermatic stains on the dress of a woman furnishes stronger evidence of intercourse, attempted or perpetrated, than their discovery on the dress of a man; but, admitting that intercourse is thus proved, it may still have taken place with the consent of the woman. These stains, when found on the clothes of girls and infants, afford a strong corroborative proof of the perpetration or of the attempt to perpetrate the crime.

Microscopical evidence from the woman.—It may become necessary to determine, in reference to a woman, whether intercourse has or has not recently

taken place. All observers agree that, within a certain period after connection, the fact may be established by the examination of the vaginal mucus. A small quantity of this mucus placed upon glass, and diluted with water, will be found to contain spermatozoa, if the suspicion be correct. M. Bayard states that he has thus detected these bodies in the vaginal mucus of females not subject to morbid discharges, at various intervals up to three days after intercourse (op. cit. p. 277); and Donné found them under similar circumstances in a woman who had been admitted into the hospital the day before (op. cit., p. 305). This evidence may become of value in a charge of rape, but it may be easily destroyed by the presence of leucorrhœa: and it is open to an objection, that, in certain morbid states of the vaginal mucus of the human female, there is found in it a microscopic animalcule, called by Donné the *Trichomonas vaginæ*. This has a larger body and a shorter tail than the spermatozoon. The annexed illustration (fig. 181) shows the form of the trichomonas, as represented by Donné. ('Cours de Microscopie,' Planche IX.) The engraving illustrates the microscopical appearance of vaginal mucus: *a a*, pus-globules; *b b*, trichomonas; the large irregular body in the centre of the engraving is an epithelial scale. Other substances may be sometimes found in the vaginal mucus; see case by Dr. Lender. (Horn's 'Vierteljahrsschrift,' April 1865, p. 355).

Fig. 181.



Pus-globules with Trichomonas vaginæ.

Marks of blood on clothing.—Marks of blood upon the linen can, of course, furnish no evidence unless taken with other circumstances. The linen may be intentionally spotted or stained with blood for the purpose of giving apparent support to a false accusation. Dr. Bayard met with a case of this kind, in which a woman charged a youth with having committed a rape upon her infant child. On examination, the sexual organs were found uninjured; and on inspecting the marks of blood on the clothes of the child, it was observed that the stains had been produced on the *outside*, and bore the appearance of smearing; the whole fibre of the stuff had not even been completely penetrated by the liquid. These facts established the falsehood of the charge. ('Ann. d'Hyg.' 1847, 2, 219.) A case involving a false charge of rape was tried at the Glasgow Autumn Circuit in 1859. One of the witnesses, an accomplice, proved that she had purchased some blood and handed it to the female who made the charge, and she saw her smear it over her person and on some sheets on which it was alleged the rape was perpetrated. The woman (*Boyle*) and her husband, who made this false charge, were convicted of conspiracy.

It may be a question whether marks of blood on the linen of a prosecutrix were caused by effusion as a result of *violence* or by the *menstrual discharge*. The menstrual fluid in the normal state is said to be entirely free from fibrin; but in respect to the red colour, the presence of red corpuscles and of serum, the two kinds of blood are similar. That fibrin is frequently present, and in large quantity in the menstrual fluid, is obvious from its being occasionally discharged in a clotted state: hence the discovery of fibrin in a stain would by no means necessarily imply that the blood was from a wound, and not due to menstrual discharge, while its non-discovery would not prove the blood to be menstrual.

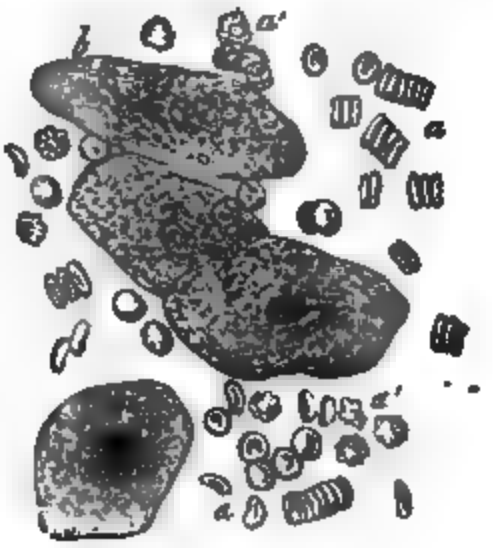
Small quantities of fibrin are not readily separable from linen stained by blood as a result of effusion; and supposing the stain to have been caused by imbibition from another article of dress already stained, the secondary

stain would be free from fibrin, which would remain in the stuff originally wetted. A man might thus wrongly pronounce this secondary stain to be due to menstrual blood. The discovery of epithelial scales and mucus, by the microscope, would not prove the stain to be menstrual, unless it could be shown that the mucus was effused with the blood which caused the stain. (See *ante*, p. 204.) The epithelial scales found in the vaginal mucus are of the tesselated variety; they are flat nucleated cells, oval, round, or polygonal in shape, and varying in size. They are spread over the mucous membrane not only of the vagina, but of the mouth, pharynx, œsophagus (gullet), conjunctiva, and the serous and synovial membranes. ('Kirkes' Physiology,' p. 304.) There must be some caution in relying upon this microscopical evidence. In

Fig. 182.

Varieties of Epithelium (Kirkes).

Fig. 183.



Menstrual blood, magnified 450 diameters, with epithelical scales.

fig. 182, *a* represents the scales of tesselated epithelium, *b* the same with the edges folded, *c* cylindrical or columnar epithelium from the stomach, *d*, from the jejunum, *e* cylinders as seen when looking at their free extremities. In fig. 183, the microscopical appearance presented by the menstrual discharge is delineated—*a*, blood-corpuscles intermixed with mucous globules; *b*, scales of epithelium.

It may be right to state, for the information of medical practitioners who have hitherto thought that they could easily distinguish menstrual blood, and swear to it on charges of rape, that a few years since the French Academy of Medicine appointed as a committee MM. Adelon, Moreau, and Le Canu, to examine this question in the most comprehensive manner. These gentlemen reported that, in the present state of science, there is no certain method by which menstrual blood can be distinguished from that effused from the blood-vessels in a case of child-murder or abortion. ('Ann. d'Hyg.' 1846, 1, 181; see *ante*, p. 204.)

Evidence of violation in the dead.—The body of a child or woman is found dead, and a medical man may be required to determine whether her person has or has not been violated before death. There is here some difficulty, because there may be no statement made by the deceased. The witness can seldom do more than express a conjectural opinion, from the discovery of marks of violence on the person and about the genital organs. Even if spermatozoa were detected in the liquid mucus of the vagina, or on the dress of a female, this would merely prove that there had been intercourse; whether violent or not would depend on the medical and circumstantial evidence. In a case of murder tried at Edinburgh some years ago, the first point to be determined in the dead body was, whether a rape had or had not been com-

mitted. The examination of the stains on the dress was conclusive, when taken in conjunction with the other evidence. The jury convicted the man of a rape, and yet acquitted him of the murder, although the proof of the latter crime was clearer than that of the rape! (For a case in which evidence was obtained on the examination of a dead body, see Casper's 'Klinische Novellen,' p. 17.)

Rape by females on males.—So far as I can ascertain, this crime is unknown to the English law. Several cases of this kind have, however, come before the French criminal courts. In 1845, a female, aged eighteen, was charged with having been guilty of an act of indecency, with violence, on the person of Xavier T., a boy under the age of fifteen years. She was found guilty, and condemned to ten years' imprisonment. In another case, which occurred in 1842, a girl, aged eighteen, was charged with rape on two children,—the one eleven and the other thirteen years of age. It appeared in evidence that the accused had enticed the two boys into a field, and had there had forcible connection with them. This female was proved to have had an unnatural contraction of the vagina, which prevented intercourse with adult males. She was found to be labouring under syphilitic disease, and the proof of her offence was completed by the disease having been communicated to the two boys. She was condemned by the Court of Assizes of the Seine to fifteen years' hard labour at the galleys. ('Ann. d'Hyg.' 1847, 1, 463.) Casper describes cases of this description which have fallen under his observation. ('Handbuch der Gerichtlichen Medicin,' vol. 2, p. 129; and 'Klinische Novellen,' 1863, p. 15.) By the Penal Code of France, it is a crime in either sex to attempt intercourse with the other, whether with or without violence, when the child is under eleven years of age. That this offence is perpetrated in England cannot be doubted. It is by no means unusual to find, in the wards of hospitals, mere boys affected with the venereal disease. In some instances this may be due to precocious puberty; but in others it can only be ascribed to that unnatural connection of adult women with male children which is punished as a crime in the other sex. The only accessible medical proof would consist in the transmission of gonorrhœa or syphilis from the woman to the child.

UNNATURAL OFFENCES.

CHAPTER 87.

PEDERASTIA—SODOMY—BESTIALITY—NATURE OF THESE CRIMES—MEDICAL PROOFS AND LEGAL RELATIONS.

Pederastia. Sodomy.—This crime is defined to be the unnatural connection of a man with mankind or with an animal. The evidence required to establish it is the same as in rape, and therefore penetration alone is sufficient to constitute it. There are, however, two exceptions: 1st, it is not necessary to prove the offence to have been committed against the consent of the person upon whom it has been perpetrated; and, 2ndly, both agent and patient (if consenting) are equally guilty; but the guilty associate is a competent witness. In one case (*Rex* v. *Wiseman*), a man was indicted for having committed this offence with a woman, and the majority of the judges held that this was within the statute. Unless the person is in a state of insensibility, it is not possible to conceive that this offence should be perpetrated on an adult of either sex against his or her will; the slightest resistance would suffice to prevent its perpetration. In August 1849 a question on this point was referred to me from Kingston, Jamaica. A man was convicted, and sentenced to transportation for life, for the crime of sodomy, alleged to have been committed on the complaining party while he was asleep. The only evidence against him was the statement of the complainant. The opinion given was in conformity with that of Dr. J. Ferguson, who referred the case to me—namely, that the perpetration of the act during a state of natural sleep was contrary to all probability. The remarks already made in reference to rape during sleep may be applied with greater force to acts of this nature. (See p. 460 *ante.*) If this crime be committed on a boy under fourteen years, it is felony in the agent only; and the same, it appears, as to a girl under twelve. (Archbold, p. 409.) The act must be in the part where it is usually committed in the victim or associate of the crime, and if done elsewhere it is not sodomy. The facts are commonly sufficiently proved without medical evidence, except in the cases of young persons, when marks of physical violence will in general be sufficiently apparent. In some instances, proof of the perpetration of the crime may be obtained by resorting to microscopical evidence. (See Donné, op. cit. p. 305.) Stains upon the linen of young persons may thus furnish evidence that the crime has been attempted, if not actually perpetrated.

This crime is punishable under the 24 & 25 Vic. c. 100, s. 61. Whosoever shall be convicted of the abominable crime of buggery, committed either with mankind, or with any animal, shall be liable, at the discretion of the Court, to be kept in penal servitude for life or for any term not less than ten years.

Sodomy is commonly understood to signify unnatural intercourse between man and man, while bestiality implies unnatural intercourse with animals. Continental medical jurists have invented a new term, *Pederastia* (παιδὸς ἐραστής,

pueri amator), comprising those cases, not unfrequent, in which boys at about the age of puberty are made the victims of the depraved passions of a certain class of men, but this term is not applicable to the crime committed by and between adults. The medical aspects of this subject have been very fully examined by M. Tardieu, 'Ann. d'Hyg.' 1857, 2, 133, 397, and 1858, 1, 137, 152; also by M. Toulmouche, 'Ann. d'Hyg.' 1868, 2, 121; and by Dr. Louis Penard, 'Ann. d'Hyg.' 1860, 2, 367. The symptoms indicative of this unnatural intercourse both in agent and patient are very fully described by these writers. Casper has also dealt with this crime and the medical evidence required to prove it. ('Gerichtliche Medicin,' vol. 2, p. 176.)

Unless an examination is made soon after the perpetration of the crime, the signs of it will disappear. In the case of one long habituated to these unnatural practices, certain changes have been pointed out as medical proofs, among them a funnel-shaped state of parts between the nates, with the appearance of dilatation, stretching, or even a patulous state of the anus and a destruction of the folded or puckered state of the skin in this part. There may be also marks of laceration, cicatrices, &c., and sometimes the evidence derivable from the presence of syphilitic disease.

This condition of parts would represent the chronic state induced by these practices in the patient or succubus. In the recent or acute form, fissure and laceration of the sphincter ani, with bruising and effusion of blood, would be found. The appearances above described as belonging to the chronic stage were met with in the case of *Eliza Edwards*, 1833 (p. 286, *ante*). This person was found after death to be a man, although he had passed himself off in dress and habits during life as a woman. On an examination of the body there was strong evidence that he had been for many years addicted to unnatural habits. It was noticed by all present that the aperture of the anus was much wider and larger than natural. There was a slight protrusion and thickening of the mucous membrane at the margin. The rugæ or folds of skin which give the puckered appearance to the anal aperture had quite disappeared, so that this part resembled the labia of the female organs. The lining membrane was thickened at the verge of the anus and was in an ulcerated condition. The male organs had been drawn up and secured by a bandage bound round the lower part of the abdomen. A short account of this remarkable case of concealed sex was published in the 'London Medical and Physical Journal,' February 1833, p. 168.

Trials for this crime are not unfrequent, but the reports of evidence are not made public. There cannot be any doubt that false charges are as common as in cases of rape. They are made for the purpose of extortion, and as the publication of such a charge, even when unfounded, is greatly dreaded and has actually led to suicide, it often proves a successful method of extortion. It is especially deserving of notice that such accusations are frequently made by soldiers and a bad class of policemen.

The case of *Reg.* v. *Boulton and Park* (Q.B., May 1871), has drawn public attention to this subject. The charge against the defendants was that of conspiracy to commit or to incite to the commission of immorality. The defendants were young men who had for some time gone about to public places dressed as women, and had been seen on public occasions to associate with men as if they were women of the town. They were beardless youths, and one of them, Boulton, had a countenance so strongly feminine, that when seen by the medical examiners, he appeared like a young woman in man's clothes. When dressed as fashionable women, they imposed upon all who saw them. These practices had gone on at intervals for one or two years before they were detected and exposed. The defence was, that they had dressed themselves as women for the purpose of performing at private theatricals, but this did not

account for all the circumstances proved against them by eye-witnesses as well as by their correspondence with many persons who were believed to be accomplices. They also assumed female names, and used them in correspondence with men. 'They habitually walked the streets and frequented places of public amusement in women's clothes, practising all the petty arts of prostitutes, submitting to be entertained as such by gentlemen, and then suddenly resuming the privileges of their own sex.' It was suggested by the course of proceedings, that the defendants had not only conspired to commit, but had actually committed, a felonious crime, but of this no proof was offered, and after a lengthened trial the jury returned a verdict of not guilty. The defendants had been examined before the trial, by a number of medical men engaged for the prosecution and defence, including Mr. Gibson, the surgeon of Newgate, and myself, acting on the part of the Crown. The medical opinions differed, but at the date of examination there was no distinct evidence that any unnatural offence had been perpetrated.

The Germans apply the term sodomy to the unnatural intercourse of man with animals. (Casper, vol. 1, p. 180.) To this we more commonly give the name of *Bestiality*. Trials for this crime perpetrated with animals, such as the cow, the mare and the she-ass, are not unfrequent at the assizes. They are not reported, and do not therefore attract any public notice. The criminals are commonly youths or men employed to look after the animals. In most of these cases the criminal has been caught *flagrante delicto*—or under such circumstances as to leave no doubt of the attempt, if not of the completion, of the act of unnatural intercourse.

Medical evidence is seldom required to sustain the prosecution. There may be, however, circumstances which can only be properly interpreted by a scientific expert. The hair of the animal may be found on the perpetrator, or marks of blood or feculent matter upon his dress, and in such cases chemistry or the microscope may enable a witness to express an opinion in proof or disproof of the charge. In one case tried at the assizes, where a man was charged with having had unnatural intercourse with a cow, the prosecution was able to show that some short coloured hairs found on the prisoner's person resembled those of the animal.

The medical jurists of Germany appear to take a remarkable interest in cases of sodomy and bestiality; and in some of their reports they have contrived to throw an air of science over the details of this detestable crime. Dr. Kutter, of Zehnenick, has published an elaborate report of a case of this kind ('fleischlicher Vermischung mit einem Thiere'), in which a sub-officer was charged by his captain with unnatural intercourse with a mare, and in support of the charge Dr. Kutter was able to furnish good microscopical evidence. The captain, on entering the stable suddenly, found the prisoner in the act of moving away from the stall of the animal. Dr. Kutter was called to examine the mare, and found some small abrasions about the genitals of the animal, and a slight escape of bloody mucus from these parts. The prisoner willingly submitted himself to examination. Dr. Kutter found some stains of blood on his shirt; and on the penis between the prepuce and the glans, there were a number of short, dark, pointed hairs. The prisoner accounted for them by saying that the night before he had had connection with some woman. Dr. Kutter examined the hairs carefully by the aid of a microscope, and found them to be shorter, thicker, and more pointed than those of a human being. They were also coarse, and less transparent. Comparing them with hairs gently rubbed off the back part of the mare, they exactly corresponded in colour, form, and length, so as to leave no doubt on his mind that there had been unnatural intercourse. It was impossible to say with any certainty that the blood-stains *on the shirt* were produced by the blood of the animal. This, however, was

not a necessary part of the evidence. (Horn's 'Vierteljahrs.' 1865, 1, 160.) On these facts Dr. Kutter gave an opinion that the prisoner had been guilty of unnatural intercourse with the mare.

A question may arise here respecting the examination of an accused person which has already been considered in reference to the examination of women charged with infanticide. The examination should be with the consent of the accused, and not made against his will, since no one is bound to furnish evidence against himself (see *ante*, p. 431). In reference to the evidence derivable from the hair of animals, the reader is referred to the microscopical characters which are illustrated in vol. 1. p. 512.

INSANITY.

CHAPTER 88.

WHAT IS INSANITY? MEDICAL DEFINITIONS—DISTINCTION OF SANE FROM INSANE PERSONS—MEDICAL RESPONSIBILITY IN REFERENCE TO THE CUSTODY OF THE INSANE—MORAL INSANITY—LEGAL DEFINITIONS—'NON COMPOS MENTIS'—SYMPTOMS OF INCIPIENT INSANITY—HALLUCINATIONS AND ILLUSIONS—LUCID INTERVALS.

What is insanity? Medical definitions.—The terms insanity, lunacy, unsoundness of mind, mental derangement, mental disorder, madness, and mental alienation or aberration, have been indifferently applied to those states of disordered mind in which a person loses the power of regulating his actions and conduct according to the ordinary rules of society. In all cases of real insanity, the intellect is more or less affected—hence the term *intellectual insanity*. In a medical sense this implies a deviation of the mental faculties from an assumed normal or healthy standard. In an insane person there may be no bodily disease, but his language and habits are changed—the reasoning power which he may have enjoyed in common with others is lost or perverted, and he is no longer fitted to discharge those duties which his social position demands. Further, from perversion of reason, he may show a disposition to commit acts which may endanger his own life or the lives of those around him. It is at this point that the law interferes for his own protection, and for that of society.

Many attempts have been made by psychologists to define insanity; but the definitions hitherto given are so imperfect, that it would be difficult to find one which includes all who are insane, and excludes all who are sane. This difficulty is fully accounted for by the fact that mental disorder varies in its degree as well as in its characters; and the shades of disordered intellect in the early stages are so blended, as to be scarcely distinguishable from a state of sanity. It is this twilight condition of the mind, when it is fluctuating between sanity and insanity, which no definition can comprise, especially as the mind differs in its power and manifestations in most persons, and it is therefore difficult to fix upon a standard by which a fair comparison can be made. The vulgar notion of insanity is, that it consists in an entire deprivation of reason and consciousness; but the slightest acquaintance with the insane proves, that they are not only perfectly conscious of their actions in general, but that they reason upon their feelings and impressions. Locke, indeed, defined a madman to be one 'who reasoned correctly from false premisses;' yet we know that not only many sane people do this, but one who is insane often reasons falsely from the objects presented to his senses, or from his own fancies. The late Dr. Abercromby considered insanity to consist in a loss of the faculty of *attention*—that power by which we are capable of changing, controlling, arresting, or fixing the current of our thoughts. Dr. Conolly regarded *it as a disorder of* the power of *comparison or judgment*, and Professor Marc,

as a loss of the faculty of *volition*; so that, in the latter point of view, the acts of the insane are all involuntary, and depend upon impulses which they cannot control.

These definitions are defective, inasmuch as they are not adapted to the various forms of the disease. In some cases of insanity, as in confirmed idiocy, there is no evidence of any exercise of the intellectual faculties; but in most instances these faculties and the moral feelings are partially diseased, or partially destroyed, in every variety and degree. Thus we may meet with cases in which the faculties of attention, comparison, and volition are more or less impaired or absent, or, if present, they are never perfect, although each may not be equally affected. When no two cases are precisely similar, no definition can include all varieties of the disorder. A medical witness who ventures upon a definition, will generally find himself involved in numerous inconsistencies; no words can possibly comprise the variable characters which this malady is liable to assume. The power which is most manifestly deficient in the insane, is, generally, the controlling power of the will.

There are, however, cases in which a medical man will find himself compelled, if not to define insanity, at least to show some clear distinction between a sane and insane person. In *Reg.* v. *Leander* (Cent. Crim. Court, June 1864), the defendant, a lady, was indicted for a misdemeanor, in receiving into her house two or more lunatics; the house not being licensed or registered to receive lunatics, under the provisions of the 8th and 9th Vict. c. 100, s. 44. Under this statute no person is allowed to receive more than one lunatic into his house, unless the house is an asylum, and registered or licensed for the reception of lunatics. The medical evidence showed that there were eighty persons, chiefly females, who were inmates of this house; and five of these, who were visited and examined by a physician of experience in insanity, were pronounced by him to be decidedly of *unsound mind*. In one there was a total loss of memory, another was a confirmed idiot, and a third was labouring under mania with excitement. The medical witness was strongly pressed in cross-examination to define insanity. He said that it was difficult to draw the distinction between weakness of intellect and unsoundness of mind, and that there was no definite line between a low state of intellect and idiocy, so that it was impossible to say where the one ended and the other began; still he was satisfied that these were cases of insanity, such as would be ordinarily received into a lunatic asylum. One of the ladies was subject to delusions, and this he considered to be a proof of unsoundness of mind. The defence rested chiefly on the suggestion that there were many sane persons whose intellects were dull, —whose memories were weakened, especially when suffering from epilepsy, and who, without being insane or lunatic, were incapable of taking care of themselves; upon this the jury were asked to believe that the ladies in the house of defendant were sane. As this suggestion was directly opposed to the medical opinion given, an attempt was made to overthrow the evidence by the statement that 'the world knew what fancies and theories medical men had on the subject of insanity;' and, whereas the certificates of two were required before a person could be confined as a lunatic, only one had been called in, in this case. The learned judge (Bramwell, B.), in charging the jury, said that 'they must be satisfied from the evidence that these were cases of *insanity*. Although medical men were often heard in Courts of Justice to define insanity, he thought ordinary men of the world were just as well qualified to form an opinion on these matters as they were.' The defendant was convicted; the jury probably thinking that, if these persons were not really insane, there would have been no want of medical evidence to prove their sanity on the part of the defence.

Another case occurred at the Central Criminal Court, in September 1864

(*Regina* v. *Wilkins*), in which a medical man was indicted under another section of the same statute, which enacts that no person (unless he derives no profit from the charge, or a committee appointed by the Lord Chancellor), shall receive to board or lodge, in any house not licensed, any *one* patient, or a lunatic or alleged lunatic, without the usual order and medical certificates as required for lunatic asylums. From the evidence it appeared that defendant had taken charge of a young lady as a boarder; she was found by the police wandering at midnight; she gave the address of the defendant, but no satisfactory account of herself. When examined by medical men, she was pronounced to be of unsound mind. The father, who had placed her with the defendant about two years before this occurrence, stated that she was excitable, but not of unsound mind. A physician, who received her after she had strayed from the defendant's house, deposed that she was then in a state of advanced imbecility verging on idiocy. In defence it was alleged that this person was only a nervous and excitable woman; that she was not insane or of unsound mind when the defendant first received her as a boarder, even if she had become so subsequently; that she lived with the family, and no restraint was placed upon her. General evidence was called to show that she was merely childish, of weak mind, and very timid; that she could talk rationally, but in a childish manner. All agreed that her mind was feeble. Of two medical gentlemen called for the defence, one said that latterly her mind had become somewhat unsound, and was not so vigorous as at first. Before the night on which she had escaped, and on which she was found wandering by the police, there was not in his opinion such unsoundness of mind as would have justified her confinement; and the other deposed that when he saw her two or three months since, he considered her to be capable of taking care of herself, although incompetent to manage her affairs, and that she required medical superintendence, but not the restraint of a lunatic asylum. This brought a question from the judge, whether he then thought that the fact of her wandering about the Edgware Road in the dead hour of the night was a proof of her being able to take care of herself! The jury found the defendant 'guilty.' There could be no doubt that this young lady was of unsound mind in the sense intended by the law: she may not have been so when first received, but the Act includes all cases in which insanity comes on after the reception of the person. The certificates given by independent medical men in this case were to the effect that she talked incoherently to herself, repeating the words 'next of kin,' without being able to explain why, that she was quite unable to maintain a conversation, and that she was labouring under imbecility in the first degree. This, together with the fact of her being found wandering at night under circumstances in which no young lady in her social position would be found, should have sufficed to prevent any difference of opinion among medical witnesses respecting the existence of unsoundness of mind in this person.

It is in such cases as these that a medical definition of insanity becomes of legal importance, and a medical expert must be prepared to say whether the person concerning whom the question is raised is idiotic, lunatic, or of unsound mind, and to assign intelligible reasons for his opinion.

Moral insanity.—In addition to that form of insanity in which the mind is affected, known as *intellectual insanity*, Dr. Prichard and other medico-legal writers have described a state which they call *moral insanity* (*Mania sine delirio*), which is manifested simply by a perverted or disordered state of the feelings, passions, and emotions, irrespective of any apparent intellectual aberration. There are no hallucinations or illusions, and there is no evidence of delusion, but simply a perversion of the moral sentiments. Thus it is alleged that this form of insanity may appear in the shape of a causeless suspicion, jealousy, or hatred of others, especially of those to whom the affected person ought to be attached;

and it may also manifest itself under the form of a wild, reckless, and cruel disposition towards mankind in general. It does not seem probable, however, that moral insanity, as thus defined, ever exists or can exist in any person without greater or less disturbance of the intellectual faculties. The mental powers are rarely disordered without the moral feelings partaking of this disorder: and, conversely, it is not to be expected that the moral feelings should become to any extent perverted without the intellect being affected, for perversion of moral feeling is generally observed to be one of the early symptoms of disordered reason. The intellectual disturbance may be sometimes difficult of detection; but in every case of true insanity it is more or less present, and it would be a highly dangerous practice to pronounce a person insane, when some evidence of its existence was not forthcoming. The law does not recognize moral insanity as an independent state; hence, however perverted the affections, moral feelings, or sentiments may be, a medical jurist must always look for some indications of disturbed reason. Medically speaking, there are, according to Dr. Prichard, two forms of insanity, moral and intellectual: but in law there is only one—that which affects the *mind*. Moral insanity is not admitted as a bar to responsibility for civil or criminal acts, except in so far as it may be accompanied by *intellectual* disturbance. The late Dr. Mayo denied its existence, and contended that no abnormal state of mind should confer irresponsibility, unless it involved intellectual as well as moral perversion. ('Medical Testimony,' p. 69.) The late Sir B. Brodie also considered that there were no reasonable grounds for admitting this to be an independent form of insanity. There has been, as he suggests, much mystification on the subject. The term has been applied to cases to which the name of insanity ought not to have been applied at all—*i.e.* to 'moral depravity,' and also to cases in which delusions have really existed, and which might therefore have been more properly classed with cases of ordinary mental aberration. ('Psychological Inquiries,' p. 99.) Of one fact we may be well assured: if in these cases of alleged *moral* insanity there is no indication of a perversion of intellect, *medical* evidence is not required to determine the degree of responsibility in reference to these persons. Those who administer the law, and any man endowed with plain common-sense, will be as well qualified as a medical expert to decide this question. Further, until medical men can produce a clear and well-defined distinction between moral depravity and moral insanity, such a doctrine, employed as it has been for the exculpation of persons charged with crime, should be rejected as inadmissible.

Legal definitions.—The law of England recognizes two states of mental disorder or alienation: 1, *Dementia naturalis*, corresponding to idiocy; and, 2, *Dementia adventitia*, or *accidentalis*, signifying general insanity as it occurs in persons who have once enjoyed reasoning power. To this state the term lunacy is also applied, from an influence formerly supposed to be exercised on the mind by the moon. *Lunacy* is a term generally applied to those disordered states of mind which are known to medical men under the names of mania, monomania, and dementia; and which are frequently, although not necessarily, accompanied by lucid intervals. The main character of insanity, in a legal view, is considered to be the existence of *delusion*—*i.e.* that a person should believe something to exist which does not exist, and that he should act upon this belief. Many persons may labour under harmless delusions, and still be fitted for their social duties; but should these delusions be such as to lead them to injure themselves or others in person or property, then the case is considered to require legal interference.

Besides the terms *Idiocy* and *Lunacy*, we find another frequently employed in legal proceedings, namely, '*unsoundness of mind*' (*non compos mentis*), of the exact meaning of which it is difficult to give a consistent definition. Ac-

cording to Dr. Forbes Winslow, the phrase 'unsoundness of mind' was first used by Lord Eldon to designate a state of mind not exactly idiotic, and not lunatic with delusions, but a condition of intellect occupying a place between the two extremes, and unfitting the person for the government of himself and his affairs. ('Lancet,' 1872, 1, 108.) This definition has been since generally accepted and acted on by all the judges.

From various legal decisions it would appear that the test for unsoundness of mind in law has no immediate reference to the existence of delusion in the mind of a person, so much as to proof of incapacity from some morbid condition of intellect to manage his affairs with ordinary care and propriety. (Amos.) Neither condition will suffice to establish unsoundness without the other: for the intellect may be in a morbid state, and yet there may be no legal incompetency; or the incompetency alone may exist and depend on bodily infirmity or want of education—conditions which must not be confounded with mental disorder. Thus, then, a person may be of unsound mind, *i.e.* legally incompetent to the control of his property, and yet not come up to the strict legal standard of lunacy or idiocy.

Some medical practitioners have attempted to draw a distinction between *insanity* and *unsoundness* of mind. A case occurred in 1839, in which a medical man hesitated to sign a certificate for the confinement of an alleged lunatic, because in it the words 'unsound mind' were used. He said he would not have hesitated to sign it had the term 'insane' been employed. The difference, if any exist, is purely arbitrary, and depends on the fact that 'unsound mind' is a legal and not a medical phrase, referring to an incapacity to manage affairs, which insanity, in its most enlarged sense, does not always imply. The law, however, appears to admit some sort of distinction; for, according to Chitty, it is a criminal and an indictable act maliciously to publish that any person is afflicted with insanity, since it imputes to him a malady generally inducing mankind to shun his society; although it is not libellous to say that a man is not of sound mind, because no one is of perfectly sound mind but the Deity! ('Med. Jur.' vol. 1, p. 351.) In reference to the signing of certificates of insanity, it is, however, an error to suppose that the use of one term can involve a medical man in a greater share of responsibility than the use of the other.

If on a commission of lunacy a medical witness states that he believes a person to be of unsound mind, he should be prepared to assign good and valid reasons for this belief, as well as what he really intends by unsoundness of mind. Questions on these points are generally put by opposing counsel.

Symptoms of incipient insanity.—The symptoms by which insanity is indicated at an early stage are liable to great variation, according to the sex, age, and social position of the person. In reference to suicide, the execution of wills, or the perpetration of crime, we often find after the death of the person, or at the trial which follows the crime, that the most trivial and irrelevant circumstances are brought forward as indications of insanity. This subject has been ably treated by Dr. Forbes Winslow ('Obscure Diseases of the Brain,' p. 88), and to his work I must refer the reader for much useful information. The facts are there gathered chiefly from the accounts furnished to him by those who have recovered. There is great irritability at the most trifling circumstances—impatience of contradiction, loquacity, great difficulty in directing attention to and steadily occupying the mind with any train of thought, neglect of usual employment, *sleeplessness*, depression of spirits without reasonable cause, a disposition to seclusion, doubts about personal identity, followed by hallucinations and illusions. A lady, who was thus gradually affected, remained insane for nearly eleven months: she informed Dr. Winslow that during the whole of that time she fancied she was in hell and tormented by

evil spirits; she thought every person near her was the devil. Sometimes a patient fancies he is continually watched by spies, that policemen are looking after him, and that conspiracies and plots among his relatives or friends are going on secretly against him; he believes that his food is drugged or poisoned, and he will refuse to eat. Great anxiety on any subject, followed by headache, may be the forerunners of an attack; there is generally an entire loss of interest in the usual occupations, a silent manner, and a great desire for solitude. In one instance, fits of immoderate laughter at the most trivial occurrences precede the attack. Sooner or later these symptoms are attended by perverted taste or smell—by illusions of hearing or sight; voices are heard, and objects are seen, which at first perplex and then confuse the patient; they continue until he feels overpowered mentally and bodily; and he then falls into delusions regarding himself, his friends who are about him, his profession or occupation, and his worldly circumstances. In incipient insanity delusion does not necessarily exist. There is an antecedent state, in which, according to Dr. C. B. Radcliffe, the most prominent feature is intense *self-conceit*. A man may retain the knowledge of his personal identity, but he may fancy himself to be wiser, richer, or stronger than he really is. Another feature is *misanthropy*, a general dislike to others without cause, but especially directed against those who have the greatest claim on his affection. This feeling may after a time become complicated with some delusion. A third symptom is a *suspicious disposition*. This, after a time, leads to delusion, and the person imagines that there are conspiracies to poison him or do him some bodily injury. (Croonian Lectures, 'Lancet,' April 1873, p. 471.) Self-conceit, misanthropy, and distrust without delusion, may be regarded as the most marked forerunners of an attack of insanity.

Hallucinations and Illusions. Delusion.—These are the most striking symptoms which are met with in a confirmed state of insanity. Hallucinations are those sensations which are supposed by the patient to be produced by external impressions, although no material objects act upon his senses at the time: illusions, on the other hand, are sensations produced by a false perception of objects. A man has visions of all kinds, including the forms of the dead and the living, floating before him, when he is gazing upon vacancy. He fancies he hears voices speaking or mysteriously whispering to him, while there is profound silence: these are hallucinations. They are entirely subjective. The act of dreaming furnishes a striking instance of an hallucination. We believe that we see and feel material forms which have no existence, and our minds are fully impressed with the reality of the scenes before us. The unreality of these images is plain enough to a sane man in a waking state, but not so with one who is insane. He is unable to shake them off, and believes in their independent existence. Dr. Hawkes has collected a number of cases showing the various kinds of hallucinations met with among the insane. ('Lancet,' 1870, 2, 775.) He has observed that those of the senses of sight and hearing are among the most common, although he has known them to be confined to taste and smell.

An insane person may imagine that his ordinary food has an earthy or metallic taste or smell, and this will give rise to that common delusion that there is a conspiracy to poison him. The illusion, however, is in his own senses—a perversion of taste or smell. Illusions are objective: they often occur during the act of suddenly waking from sleep—giving rise occasionally to serious questions involving criminal responsibility. The state of insanity is in other points of view analogous to dreaming. There is equally a want of power in the two stages to change or control the current of thought passing through the mind. Things which are impossible and inconsistent, are believed to have

an actual existence. A voice heard during the act of dreaming sometimes becomes an illusion connected with a current of thought then passing through the mind; it is the same in a case of confirmed insanity, with this difference in the latter—that some power of will or some exercise of reason may still exist.

Although a person may labour under hallucinations without any mental disorder independently of that requisite for their production, yet they may, if protracted, give rise to insane ideas. They may become the source of confirmed delusion, and thus lead to an attack of insanity. Hallucinations and illusions frequently coexist in insanity; but in two-thirds of all cases the hallucinations are confined to the sense of hearing. Voices calling to the person from the corners of his room, and directing him to do certain acts, are heard where none exist, and the illusion is sometimes displayed in a voice being heard differently from what it is: a harsh and grating noise may be thus mistaken for the finest musical sounds. So with the sense of feeling; the folds in the sheet of a bed on which an insane person is lying, may be mistaken for hot coals, or bundles of serpents, and sometimes nothing but force will compel the patient to sleep in a bed; if permitted, he will get out and prefer sleeping on the floor. It is questionable how far force is justifiable under these circumstances, when the health of a person is not likely to suffer by his apparently irrational conduct. His illusion is not cured, but strengthened; and such treatment frequently brings on a violent fit of maniacal excitement. Hallucinations occasionally exist in persons who are sane, but whose health is disordered, and then we generally find them connected with the sense of vision. They are indicative of functional disturbance, but merely of a temporary kind. It is to this we may refer the alleged appearance of ghosts and apparitions. These are pure hallucinations; they are entirely subjective.

The illusions of the insane are sometimes of a remarkable nature. Thus, an object may be seen by them, but in size and shape it may be subject to continual changes. The Hon. Mr. Perceval, in reference to his own condition, mentions that on the commencement of his insanity, while looking at a boiled fowl which was prepared for his dinner, it appeared very large and plump, then it suddenly became small and meagre, and afterwards of twice its former size. So in watching a fellow-patient, who was one day walking in the airing-ground, he observed at one part of the walk that this man suddenly changed in shape, and walked into the house under the form of a demon. ('Personal Narrative,' p. 81, 1838.) The illusion from the same object is therefore not always fixed and permanent, but subject to momentary changes. Illusions do not merely proceed from impressions produced on the external senses; they often arise from internal sensations; in other words, they are subjective, and give rise to strange fancies, and singular and perverted ideas. A man confined in an asylum labouring under disease of the lungs, protested to me that he felt the fires of hell burning within his chest. To the same class of disordered impressions among lunatics, may be referred the feeling of insects crawling over the skin—of the flesh being gnawed from the bones, or of their bodies being cut and torn to pieces. Illusions are sometimes met with in the sane, but when arising from external objects the false perception is soon corrected by a reference to the other senses; and herein consists the main difference between sanity and insanity—namely, *delusion*, or a misleading of the mind. When the hallucination or illusion is believed to have a positive existence, and this belief is not removed either by reflection or by an appeal to the other senses, the person is insane; but when the false sensation is immediately detected by the judgment, and is not acted on as if it were real, then the person is sane. *Delusion*, therefore, properly refers to the judgment, and *illusion* to *the senses*. The meaning of these terms is often confounded; but while delu-

sion is always connected with insanity, illusion is not necessarily indicative of mental disorder.

Hallucinations and illusions are the main features of those forms of insanity which are known as mania and monomania. Out of 229 cases of mania M. Brierre de Boismont found that 178 were affected with hallucinations and illusions. Among these 54 suffered from hallucinations only, 60 from illusions, and 64 from both. His paper contains reports of cases showing the nature of these morbid sensorial impressions, and their influence on the actions and conduct of the insane. ('Ann. d'Hyg.' 1861, 2, 145.) Hallucinations and illusions are rarely met with in cases of idiocy and imbecility, sometimes in dementia, but they are most common in paroxysms of mania. Acts of murder may generally be traced to their existence, for the person labouring under mania or monomania is unable during a paroxysm to divest his mind of the belief that what he sees has a positive existence before him. He feels impelled to suicide by the hallucination of voices calling to him, and to murder by the illusion that he is not destroying a wife, child, or friend, but an evil spirit substituted for them.

The acts of the insane are generally connected with their *delusions*, although it is not easy to trace the connection except by their own admissions. When the acts are unusual and strange, it is most probable that they depend on hallucination, illusion, or both. M. Marc mentions the case of a man who for many years had been in the habit of licking the bare walls of his apartment with his tongue, and apparently with the greatest relish. No one could imagine what was the cause of this patient's perseverance in so painful and disgusting a habit—for in many parts he had actually worn away the plaster—when one day M. Marc was upbraiding him on the subject, and he then confessed that he fancied he was tasting and smelling the most delicious fruit. ('De la Folie,' vol. 1, p. 195.)

It is important to observe that, although some who labour under insanity are aware of their condition and lament it, this is chiefly confined to incipient and convalescent cases. In general, they are not in the least conscious of their situation, but affirm that they are in better health and spirits than usual, and in the possession of a perfect mind. Those who have been depressed prior to the attack will become cheerful afterwards, and *vice versâ*. The Hon. Mr. Perceval, whose first evident delusion was that of mistaking a red silk handkerchief for one saturated with blood, thus describes the commencement of his attack:—'Whilst thus reflecting (referring to some religious views which had troubled his mind), a new and wonderful sensation came upon me from my head downwards, through my whole frame. I felt a spirit or a humour shedding its benign influence, the effect of which was that of the most cheerful, mild, and grateful peace and quiet.' ('Personal Narrative,' p. 21.) This description coincides with general observation. There can be no greater mistake than to suppose that what to ourselves is an obvious delusion, is a delusion to the insane. No insane patient was ever yet convinced by any sort of reasoning that he saw things falsely, or judged of them incorrectly; hence it would be just as absurd to try to reason him out of his belief, as it would be to try to reason a sane person out of his belief of what was real and true. (Pagan, op. cit. op. 26.)

Some have supposed that there is a loss of memory in the insane—that they have not the power of remembering what took place during their insanity, or of recalling their sensations. This may be the case in some instances, but it is certainly not so in all; and no general rule can be laid down on the subject. The Hon. Mr. Perceval appears to have retained an acute remembrance of his attack, and of his condition and treatment while it lasted. He published his 'Narrative' on his recovery; in this the most minute circumstances are recorded.

Lucid intervals.—By a lucid interval, we are to understand, in a legal sense, a temporary cessation of the insanity, or a perfect restoration to reason. This state differs entirely from a remission, in which there is a mere abatement of the symptoms. It has been said that a lucid interval is only a more perfect remission, and that although the lunatic may act rationally and talk coherently, yet his brain is in an excitable state, and he labours under a greater disposition to a fresh attack of insanity than one whose mind has never been affected. Of this there can be no doubt, but the same reasoning would tend to show that insanity is never cured; for the predisposition to an attack is undoubtedly greater in a recovered lunatic than in one who is and has always been perfectly sane. Even admitting the correctness of this reasoning, it cannot be denied that lunatics do occasionally recover for a longer or shorter period, to such a degree as to render them perfectly conscious of and legally responsible for their actions like other persons. The law intends no more than this by a lucid interval: it does not require proof that the cure is so complete that even the predisposition to the disease is entirely extirpated. Such proof, if it could even be procured, would be totally irrelevant. If a man acts rationally and talks coherently, we can have no better proof of a restoration to reason. If no delusion affecting his conduct remain in his mind, we need not concern ourselves about the degree of latent predisposition to a fresh attack which may still exist.

Lucid intervals sometimes appear suddenly in the insane: the person feels as if awakened from a dream, and there is often a perfect consciousness of the absurdity of the delusion under which he was previously labouring. The duration of the interval is uncertain; it may last for a few minutes only, or may be protracted for days, weeks, months, and even years. In a medico-legal view, its alleged existence must be always looked upon with suspicion and doubt when the interval is very short. These lucid intervals are most frequently seen in cases of mania and monomania; they occasionally exist in dementia when this state is not chronic, but has succeeded a fit of intermittent or periodical mania. They are never met with in cases of idiocy and imbecility. It is sometimes a matter of great importance to be able to show whether or not there exists or has existed a lucid interval, since, in this state, the acts of a person are deemed valid in law. The mind should be tested, as in determining whether the patient is labouring under insanity or not. He should be able to describe his feelings, and talk of the subject of his delusion, without betraying any signs of unnecessary vehemence or excitement. It may happen that a person who is the subject of a Commission of Inquiry is at the time of examination under a lucid interval, in which case there may be some difficulty in forming an opinion of the existence of insanity. This occurred in the case of *Lady Seymour* (July 1838): when examined before a Commission her replies were so rational and collected, that no verdict could be given, and the case was adjourned. When the inquiry was resumed, it was satisfactorily proved that she was insane, not merely by general and medical evidence, but by the terms of her will, which had been drawn up by herself. The same condition existed in the cases of *Mrs. Hartley* and *Mr. Pearce*, who were the subjects of Commissions in 1843. It has been said that a person in a lucid interval is held by law to be responsible for his acts, whether these are of a civil or criminal nature. In regard to criminal offences committed during a lucid interval, it is the opinion of some medical jurists that no person should be convicted under such circumstances, because there is a probability that he might at the time have been under the influence of that degree of cerebral irritation that renders a man insane. (Prichard.) This remark applies especially to those instances in which the lucid interval is very short. Juries now very seldom convict, however rationally in appearance a crime may have been perpetrated, when it is clearly proved that the accused was really insane within a short period of the time of its perpetration.

CHAPTER 89.

VARIETIES OF INSANITY—MANIA—DEMONOMANIA—PANOPHOBIA—EFFECTS OF COLD ON MANIACS—ABSTINENCE FROM FOOD—DELUSIONS REGARDING POISONS—DELIRIUM DISTINGUISHED FROM MANIA—MONOMANIA—ILLUSIONS AND DELUSIONS—ECCENTRICITY.

Varieties of insanity.—Medical jurists have commonly recognised four distinct forms of insanity: *Mania*, *Monomania*, *Dementia*, and *Idiocy* (*Amentia*). This division was proposed by Esquirol; and although of a purely artificial nature, it is highly convenient for the arrangement and classification of the facts connected with the subject. In some instances there is great difficulty in assigning a particular case to either of these divisions, which is owing to the circumstance that these states of disordered mind, if we except idiocy, are frequently intermixed, and are apt to pass and repass into each other. On other occasions a case may represent mixed characters which appertain to all the divisions. Some psychologists have proposed two subdivisions—namely, *Incoherency* and *Imbecility*; but the former is merely a mixed state of mania and dementia, while the latter is a term applied to those cases of idiocy wherein the mental faculties are susceptible of some degree of cultivation after birth, without reaching the normal standard.

MANIA.

In this form of insanity there is a general derangement or perversion of the mental faculties, accompanied by greater or less excitement, sometimes amounting to violent fury. (Pagan's 'Med. Jur. of Insanity,' p. 59; Marc. 'De la Folie,' vol. 1, p. 211.) Ideas flow through the mind without order or connection, the person losing all control over his thoughts, and believing and acting upon them, however absurd and inconsistent they may be. Rapidity of utterance and incessant agitation accompany this state; there is also great irritability, so that not the least contradiction can be borne. Mania may take place suddenly, as after a violent moral shock, but in general it comes on slowly. It may be chronic or acute, recurrent or continued. There are very few cases which do not present remissions, more or less complete; and in some instances, after a violent attack, the reason appears to be perfectly restored, forming then what is termed a lucid interval, the clear distinction of which, in a legal point of view, is of material importance.

A person afflicted with mania experiences in an early stage hallucinations and illusions; sometimes these are of a pleasant character; as a hunter will fancy that he is pursuing the stag, that he plainly hears the sound of the horn and the baying of dogs. In other instances the voices of demons are continually heard, and their forms are constantly seen. This state is called *demonomania*. An animal, or a particular person hated by the patient, will take on the form of the devil, and no reasoning or close inspection, will suffice to dissipate this dreadful illusion. The look and language of demonomaniacs are those of the most extreme despair: the devil is either always present before their eyes, or visits them occasionally, and during the darkness of night, when they believe these visits to be made, they may be heard talking, howling vociferously, resisting and struggling, as if they were really engaged in a mortal conflict; they complain that the fires of hell are burning within them, and that God has wholly forsaken them. This form of mania has sometimes made its appearance at once as the result of a severe moral shock, and persons affected with it are very apt to commit suicide or murder. When the idea of an evil spirit is fixed and permanent, demonomania is rather a variety of monomania.

than of mania; most writers place it under the head of monomania, but where this alternates with other delusions, it is a form of insanity which belongs to mania. Murder perpetrated in a fit of insanity may be frequently traced to delusions connected with the devil.

The annexed illustration (fig. 184) represents a patient of Esquirol's, affected with this form of mania. Her life was misery to herself and others. Her delusion was that she was the wife of the devil, and had been so for a million years—that he was always present before her, and persuaded her to commit the most atrocious crimes. Her body was in incessant motion, and she sought for any opportunity to injure others, even to the destruction of life. (Esquirol, 'Maladies Mentales,' vol. 1, p. 498.)

Fig. 184.

Portrait of a woman affected with demonomania. (Esquirol.)

A person affected with mania sometimes has a dread or fear of everything around him; he cowers down, tries to conceal himself, and shudders at the approach of any one. This state has been called *panophobia*.

There is a popular notion, that violent fury is met with in all cases of mania; but this is an error. In some instances, as in those just referred to (panophobia), this symptom is wanting. These persons are seldom excited to any acts of violence, and should they give way to passion, they are easily subdued by the slightest menace.

In the greater number of cases of mania there is excitement, coming on in paroxysms without any obvious cause, and leading the patients to acts of violence either towards themselves or others. These are the instances which chiefly require close personal restraint; this, however, has a tendency to increase the severity of the fit, and a more simple plan of treatment, *i.e.* of watching by personal attendants, has been generally adopted. The fits of violence sometimes come on in a sudden and unexpected manner. On the occasion of a visit which I made to an asylum, a female patient who had been for some time remarkably quiet in her manner, and was considered so far convalescent as to be about to leave the place, seized a living rabbit and tore it to pieces, limb from limb; had she had the opportunity she would probably have done the same with a child. Her mania had suddenly returned, and it was necessary to place her again in confinement.

In visiting a person said to be affected with mania, for the purpose of examination, a medical practitioner cannot be too cautious. The fire-irons and all other articles which may be used as weapons of offence should be removed. The late Dr. Armstrong was accustomed to relate, in his lectures, that on one occasion in examining a patient he narrowly escaped with his life. The examination had for some time been conducted quietly, and without any appearance of excitement on the part of the patient, when the man suddenly seized a poker, and aimed a heavy blow at the physician. Fortunately he missed his aim, and assistance was at hand, or Dr. Armstrong might have fallen a victim to the maniac's violence. Mr. Vance, a London medical practitioner, lost his life in consequence of the carelessness and neglect of the attendants. He was sent for to visit a patient suffering under an attack of mania, and just as he had reached the top-stair, the maniac rushed out of his room and precipitated Mr. Vance headlong to the bottom of the stairs: he died soon afterwards. A calm and quiet manner is very apt to allay the suspicion of a medical attendant,

and thus furnishes the maniac with the opportunity which he seeks to do injury to others. On one occasion, in accompanying Dr. Esquirol round the Lunatic Asylum of Charenton, near Paris, I was suddenly seized from behind by a tight grasp round my neck, by which I was rendered powerless, and felt almost strangled (garotted). Dr. Esquirol and other physicians, who had gone forward, on hearing the wild shriek of my assailant, turned back, and rescued me from a somewhat perilous position. One of the female patients, who a few minutes before had been seen by the physician, and had presented nothing but a calm appearance and quiet manner, had silently crept behind me, being the last of the party, and had suddenly thrown both her arms around my neck, apparently with a view of throttling me. These persons are overawed by numbers, but they have the cunning to measure their strength with one person, and to take any advantage for making an attack on him. The restless eye, the stooping gait, the incessant incoherent talking, and the quick and excited manner characteristic of mania, are not always met with in those patients who are most disposed to acts of violence; on the contrary, we should always be on our guard in such cases, although we may think that precautions are less required.

Fig. 185.

Portrait of a woman in a fit of mania.

The countenance is much altered during a paroxysm of mania; the eyes are in constant motion, injected, sparkling, and prominent; the eyebrows are raised,—the hair is erect,—the features are contracted,—the look is vague, except in a fit, when it is menacing. The annexed engraving (fig. 185) is taken from an illustration by Esquirol ('Maladies Mentales,' vol. 2, p. 162). It portrays the aspect of a woman in a violent fit of mania, while placed under bodily restraint. The features show not only intellectual disorder, but great fury; so altered is the countenance by the fit of mania, that the sex is not distinguishable. During an intermission—on the access of a lucid interval or on recovery—the features are so changed that the person could be no longer recognized as one and the same. Figs. 186 and 187 (p. 488), also taken from the illustrations of insanity published by Esquirol (op. cit. vol. 2, p. 165), are well calculated to show the difference presented by the same countenance in a fit of a mania aud during a lucid interval. The contrast in physiognomy is well marked in reference to the state of the intellect: in fig. 186 violent rage, fierceness, and anger are strongly displayed in the features; while in fig. 187 they are calm and composed, with that slight shade of melancholy over them, which, as Esquirol remarks, is so commonly seen after a fit of mania.

In mania the patient sleeps but little, and sleep is disturbed by painful dreams. There is sometimes more maniacal excitement by night than by day, and this is especially the case during moonlight nights, owing to the stimulus of light, which adds to the restlessness of the patients. This increased restlessness has given rise to the popular notion of the malady being influenced by the changes of the moon, from which the term lunacy (*luna*) as well as the word mania (μήνη the moon) is derived.

It has been remarked that in mania there is great insensibility to cold and heat. Some persons affected with this form of insanity have lost their sensibility to such a degree, that they will, if permitted, lie without any covering on a cold stone floor in the midst of winter, or they will handle red-hot coals without any expression of pain; in this case there is usually paralysis. This blunted

sensibility is not, however, universal; and we must be careful not to draw from it the inference which has been erroneously drawn on some occasions, in which the death of lunatics in asylums has been a subject of judicial inquiry, —namely, that these persons are less susceptible than sane people of the injurious effects of cold. Their bodily susceptibility is probably just as great, while they want that warning power which a proper sense of feeling gives to a sane person. The death of a lunatic of the name of *Dolley* at the Surrey

Fig. 186.

Aspect of a girl in a fit of mania.

Fig. 187.

The same on recovery (lucid interval).

Lunatic Asylum, in March 1856, was ascribed to the effects of a cold shower-bath, continued for an unusual period. This case involved a serious medical question respecting the treatment of the insane. The patient, æt. 65, was exposed to a shower-bath for half an hour, at a temperature of 45°; and after removal from this, a full dose of tartar-emetic was given to him. The man died in about a quarter of an hour, and a coroner's jury returned a verdict to the effect that death was caused by this maltreatment. The Grand Jury however threw out the bill, and *Mr. Snape*, the medical gentleman implicated, was exonerated by a medical committee and subsequently reinstated in his office. The treatment was in this case adopted *bonâ fide*, but, nevertheless, if frequently carried out to the same extent, it would expose the lives of aged lunatics to great risk.

Maniacs in some cases are not so susceptible of pain from local injuries as those who are sane. Mr. Abernethy was accustomed to relate, in his surgical lectures, a singular case illustrative of this statement. A maniac who had been violently exerting himself met with a severe compound fracture of the leg. He was put to bed, the bones were replaced, and all the requisite apparatus carefully adjusted by the medical attendants. The maniac, who had watched the operation, soon after their departure and during the absence of his attendant, removed the splints from the fractured leg, and applied them with great skill and nicety to the sound member, concealing the broken leg in a hole which he had made for that purpose in the mattress. At the next visit the surgeon expressed himself satisfied with the manner in which things were going on, stating to the friends that it was impossible the leg could be more straight, or fixed in a better position than that in which it then was. In a day or two symptoms of great constitutional disturbance appeared, and while the surgeons were standing round the bed, and were proposing to remove the splints, the insane patient, to their great astonishment, suddenly drew the fractured leg out of the hole in which he had concealed it, and held it up before

them. Its appearance, surgically speaking, was anything but satisfactory. According to Mr. Abernethy, the leg was curved, the bones were displaced, and the wound was filled with a tuft of feathers. Notwithstanding the inflamed state in which it was found, the patient had not expressed any feeling of pain, and it was this perfect tranquillity on his part which had prevented any suspicion arising in the mind of his attendant.

The comparative insensibility of the insane to severe injuries may also give rise to medico-legal questions. This loss of sensibility has been especially noticed when paralysis is associated with the mental disorder. Cases of this kind have been recorded by Esquirol and other writers on Insanity. In *Reg.* v. *Slater and Vivian* for manslaughter (C.C.C. Sept. 1860), the evidence for the prosecution showed that deceased, a lunatic suffering from incipient general paralysis, died rather suddenly three days after a serious struggle with one of his attendants. There were a few slight marks of bruises on the right side of the neck and face, and there was a bruise on the abdomen. On inspection, six ribs were found fractured on the right side, and five on the left. The fractures were at a short distance from the cartilage, and were unattended with any displacement. In the abdomen there were lacerations of the left lobe of the liver, two inches in length, and a quantity of partially-coagulated blood was effused in the cavity. These injuries were undoubtedly the cause of death, but when and how were they inflicted? There was no evidence that the deceased had been subjected to any violence except in the struggle with his attendant *three days* before his death. As this was a life-and-death struggle, and great violence must have been used on both sides, it was considered that the cause of the injuries was sufficiently explained, and that death might have arisen from the violence inflicted by the attendant in endeavouring to escape from the attack of the lunatic. At a subsequent period, two of the lunatics confined in the same ward stated that deceased had been maltreated by the two prisoners shortly before death; that they had thrown him upon the ground, pounded his body with their fists, had stamped on him with both feet, and then dragged him along the floor. Mr. Luke, the late Mr. Partridge, and Mr. Holt gave evidence of opinion to the effect that the injuries found on the body could have been inflicted only a short time before death, and that although lunatics might show an indifference to pain, yet it was impossible for such injuries as these to have been inflicted three days before death without the deceased exhibiting marked symptoms. The fact of so many ribs being broken would have materially affected respiration: his breathing would have been difficult, and would have attracted observation. As no symptoms were observed, they believed that the injuries which were the cause of death had been inflicted not more than two hours before the man died. Mr. Tyerman and Dr. Tucker, medical officers of the asylum, considered that the injuries might have been inflicted on the deceased in the violent struggle with the attendant three days before his death, and that he might not have exhibited any symptoms of suffering from the injuries during the interval. It was a case of insanity attended with paralysis, and this might have rendered the deceased insensible to pain. The jury acquitted the prisoners. (Winslow's 'Medical Critic and Psychological Journal,' No. 1, January 1861, p. 91.) The power to sustain injuries, and to perform acts of volition and locomotion inconsistent with ordinary surgical experience, has been elsewhere noticed (vol. 1, p. 606). An insane person may not only have this power, like others, but his disorder may diminish his sensibility to the effects of violence.

Persons suffering from mania are able to sustain the privation of food for a great length of time without any apparent injury to health. In some instances, owing to a suspicion that the food is poisoned, they decline to take any; it is then necessary to feed them by the stomach-pump. (Winslow's 'Obscure Diseases of the Brain,' p. 71.) This delusion respecting the poisoning of food

is very common in the early stages of mania. On several occasions, when the report of a remarkable case of poisoning has excited public attention, I have been consulted by persons in reference to the alleged poisoning of their food. Wine, bread, milk, and other articles, have been brought to me for analysis; but although the result has proved the absence of poison, it has not been possible to persuade the patients that poison was not present. The delusion may be sometimes traced to a peculiar taste in the article of food; at others it has only its usual taste, and the suspicion of poisoning is based entirely on a delusion. In nearly all cases of this description, some person is indicated as the poisoner, and small circumstances in reference to the conduct of this person are magnified into proofs of guilt. In one case some flour which had been used for dressing oysters was brought to me by a medical man for analysis: he felt confident, from the symptoms which he suffered, that the substance was strychnia, and that his wife had put it over the oysters in order to poison him! He informed me that he took the opportunity of her leaving the room to collect a little of the supposed poison, which he brought to me very carefully sealed in a paper, with a written statement of the symptoms which followed, among which some of the symptoms of strychnia had been very well described. On another occasion, this gentleman brought for analysis a pair of stockings, on which he said his wife had rubbed the extract of belladonna in order to make away with him secretly. The stains on the stockings were large iron-moulds, but he said he perceived in them the smell of belladonna, and after he had worn them his pupils became dilated, and he had dryness in the throat with trembling and convulsions of the limbs! He probably took the account of these symptoms from a book on poisons. A solicitor retired from practice brought to me a copper tea-kettle, which he said was lined with crystallized arsenic, which had been used for poisoning his sister eight years before: he had kept it privately since that date, and was very desirous of having his suspicions confirmed by a chemical analysis. It proved to be nothing more than the common fur of tea-kettles, and consisted of carbonate and sulphate of lime; there was no arsenic. The whole was a delusion, for the circumstances under which his sister had died left no doubt that her death was owing to natural causes. A continual brooding over his lost relative, and a want of mental and bodily occupation, had led to an attack of insanity.

It is necessary that a medical jurist should be able to distinguish a case of *mania* from one of delirium depending on bodily disease. *Delirium* closely resembles the acute form of mania—so closely that mistakes have occurred, and persons labouring under it have been improperly ordered into confinement as lunatics. The following are perhaps the best diagnostic differences:—A disordered state of the mind is the first symptom remarked in mania; while delirium is a result of bodily disease, and there is greater febrile excitement in it than in mania. Delirium being a mere symptom attendant on the disease which produces it, exists so long as that disease and no longer; while mania, depending on widely different causes, is persistent. Delirium disappears suddenly, leaving the mind clear; while mania commonly experiences only remissions. (See Pagan's 'Med. Jur. of Insanity,' p. 69.) In delirium there is generally great acuteness of the senses. Inflammation of the brain or its membranes (*phrenitis*) is distinguished from acute mania by the mode of its attack, the presence of severe pain in the head, and excessive sensibility with intolerance of light and sound.

MONOMANIA.

This name is applied to that condition in which the mental alienation is *only partial*; in other words, it is nothing more than partial insanity. In *mania, the mind* is disordered on all kinds of subjects; in monomania the dis-

order is confined chiefly either to one subject or to one class of subjects. Monomaniacs are infected with false ideas on certain points, of which they cannot divest themselves, and out of which they cannot be reasoned: they start from false principles, but setting this aside, their inferences and deductions from these principles often possess logical accuracy. In every subject not connected with their special delusion, they are like the rest of the world; they talk and reason as justly upon facts as before the access of their malady, but their general deportment, habits, and character are changed. Thus, a miser may become a spendthrift, and a hardworking and industrious mechanic may pass his time in idleness; a man of moral habits will become immoral in conversation and conduct, and an abstemious man may become a drunkard.

The monomania may be so slight that the person will have the power of controlling his thoughts and actions, so as to appear like one who is sane so long as the subject of his delusion is not referred to. He may then betray himself, but these persons have sometimes a great power of self-control, and of concealing from the medical examiner the delusions under which they labour. Dr. Conolly mentions the case of a gentleman whose only delusion was that the Queen of George III. was deeply in love with him, and had privately given him to understand the favourable nature of her sentiments towards him. Although he conducted himself with propriety, yet, according to the custom of those days an application was made for a Commission of Lunacy. This was issued, but those who were entrusted with the management of his affairs were obliged to call in the assistance of the supposed lunatic, and to treat him as a sane person. ('Indications of Insanity,' p. 408.) There is no doubt that those who are affected with monomania in an early stage, are frequently able to direct their minds with reason and propriety to the performance of their social duties, so long as these do not involve any of the subjects of their delusions. Their power of controlling their thoughts and feelings, and of concealing their delusions, implies a certain consciousness of their condition not usually met with in mania; and it also appears to imply such a power of self-control over their conduct, as to render them equally responsible with a sane person for many of their acts. In a case of confirmed monomania, however, it is not to be supposed that a man is insane upon *one* point only, and sane upon all other subjects. The only admissible view of this disorder is that which was taken by Lord Lyndhurst, in one of his judgments. In monomania the mind is unsound; not unsound in one point only, and sound in all other respects, but this unsoundness manifests itself principally with reference to some particular object or person. (Prichard.) There is no doubt that all the mental faculties are more or less affected, but the affection is more strikingly manifested in some than in others.

Monomaniacs frequently reason with correctness from false premises. A man fancying himself to be made of butter, will avoid going into the sun or sitting near a fire; another, who fancied himself to be made of glass, would allow no one to approach or touch him lest he should be broken. A common delusion relates to the presence of poison in food; this leads to abstinence from all kinds of food, or from food prepared by a particular person. When these harmless and absurd delusions exist, they require no interference unless they betray the person into acts of violence which are likely to injure himself or others. The mind may be generally unsound, but if the conduct of the person in the ordinary affairs of life is not irrational, there is no reasonable ground for interfering with his liberty of action. Dr. Haslam mentions the case of a well-educated architect, who thought that while he was asleep ideas leading to splendid discoveries were stolen from his brain by sprites creeping into his ears. To prevent this continual robbery of his intellect, he stuffed his ears with cotton, put on a flannel nightcap, and slept with his head in a tin saucepan! The delusion had here obtained so great a control over the

patient's thoughts and actions as to affect his general conduct, and render him a proper subject for an asylum.

Sometimes the monomaniacal idea amounts to a conviction of the loss of personal identity, or of the loss of life. Baudelocque, an eminent French physician, laboured under a delusion of this kind; he believed he had been dead for several years, and referred all who made inquiries after him to his executors. When any one felt his pulse, he affirmed that it was not his own but some other person's. A more remarkable instance is mentioned by Dr. Conolly. (Op. cit. p. 288.) An old gentleman fancied that he had died some years ago, and he communicated the intelligence of his decease to his family, with an air of perfect resignation; only he professed himself a little shocked to find the windows of the house not closed on the occasion. He would desire that it might be communicated to his absent friends that he went off quietly, with many other absurdities. These cases show what very curious ideas may be taken up and persisted in by persons who are otherwise possessed of fair powers of reasoning on most subjects.

In judging of the state of a person alleged to be affected with monomania, the existence of occasional illusions of the senses must not be confounded with fixed delusions affecting the mind. Sane persons occasionally suffer from illusions as the result of bodily disease or physical injury; but they are recognized as such, and do not influence their actions or language. If a person is in a sane state of mind, he does not mistake the illusion for a real object; he has the power, by a single effort of his will, to cause the image to vanish. A lady of good social position, for many months previous to her death, fancied that objects which she looked at, took the form of mice. She could for a time dispel the illusion by the aid of her other senses, or by requesting friends to handle different articles, or place themselves in chairs on which she saw the mice, so that she might be satisfied that it was an illusion of her senses. This, however, was an indication of incipient disease of the brain, and she ultimately died insane. Illusions in the sane are generally indicative of bodily disease affecting the brain either directly or indirectly.

The phantoms which appear to us in dreams, although believed at the time to be real objects, vanish immediately on waking if the mind and body are in a healthy state. In some cases, however, the false image has been observed to remain for a certain time, so as to confuse the judgment of a waking person: The late Sir B. Brodie records the case of a friend who, on awakening one morning, saw standing at the foot of his bed a figure in a sort of Persian dress. It was as plainly seen and as distinct as the chairs and tables in the room, so that his friend was on the point of going up to it that he might ascertain what or rather who it was. Looking, however, steadfastly at it, he observed that although the figure was as plain as possible, the door behind it was plainly to be seen also, and presently the figure disappeared. Considering the matter afterwards, he recollected that he had had a dream in which the Persian figure played a conspicuous part, and thus the whole was satisfactorily explained; it being evident that the hallucination of the dream, so far as this part of it was concerned, had continued after he was awake, and the perception of the imaginary object had existed simultaneously with that of the real objects. There is no doubt that this is 'the history of many startling and mysterious tales of ghosts and spirits.' ('Psychological Inquiries,' p. 80.) The hallucination of a disturbed dream remains, and the mind, if in an unhealthy state, is unable to divest itself of the unreality of the images apparently impressed on the senses: as in the well-known ghost-scene produced by reflection on a sheet of glass, real and phantom (reflected) objects are seen together, and the mind of the waking person is at first unable to disconnect them, or to discover which is the *true and* which the false image.

Sir B. Brodie describes the case of a gentleman, æt. 80, who had had a fit which was considered to be apoplectic. He was taken home and bled, and recovered his consciousness; he died, however, in a few days after the attack. During this interval, although having the perfect use of his mental faculties, he was haunted by the appearance of men and women, sometimes in one dress and sometimes in another, coming into and loitering about his room. These figures were so distinct that at first he always took them for realities, and wondered that his family should have allowed such persons to intrude themselves upon him. But as he was quite sane, he soon by a process of reasoning corrected this error, and then talked of them as he would have talked of the illusions of another person. (Op. cit. p. 81.) In this respect he possessed over his mind that controlling power which is wanting in insanity. When, however, the brain is in a diseased condition, the senses and judgment cannot correct the sensuous error, and a delusion arises which may be either temporary or permanent; the will is powerless, and the image is believed to have a real and independent existence. The Hon. Mr. Perceval, writing of his condition in the incipient stage of insanity, makes the following statement:—'When I had more liberty, and was aware of my situation, I stood one day in my bedroom before the little square glass, reflecting upon self-destruction, upon which I had always looked as a cowardly, mean, ungenerous action. Perhaps it was after having heard a patient make some painful remarks on it before others—perhaps it was after hearing a servant describe how one of the patients had put his head under a cart-wheel: but, at the time, I was considering also how a man could summon boldness to endure the bodily pain, as well as obliterate moral feeling—when my right arm was suddenly raised, and my hand drawn rapidly across my throat, as if by galvanism.' (Op. cit. p. 171.) This gentleman after his recovery had a relapse, and committed suicide in 1840 by throwing himself from a window.

The delusion of a monomaniac will be generally uppermost in his mind: his will is powerless to dismiss it, just as in mania the will is powerless to stop the constant and rapid succession of different and perhaps heterogeneous ideas which present themselves to the mind in this form of insanity. Esquirol mentions the case of a patient, who employed himself in running up and down the ward of the asylum, and in striking at the shadow of his person with a stick; the faster he ran, the more violently he struck. It was found that this man did not recognize his own shadow, but he had the fixed delusion that it was a large number of rats which were incessantly pursuing him.

In the first stage of monomania the judgment may be strong and the mind apparently sound upon every point except the particular subject of delusion, and even, in some instances, there may be such a control over this delusion, that it would be difficult to discover whether or not there was any just ground for imputing mental unsoundness; but in a more advanced form of the disease, the delusion, whatever it may be, whether relating to wealth, ambition, religion or politics, so overpowers the patient that he loses all self-control. His character is changed, and his habits are such as to render him unfit for social intercourse; he becomes incoherent; his ideas are perverted on all subjects, and he gradually lapses into mania or dementia. The last condition happens when the monomania is of long standing. Monomania may be remittent or intermittent, and it is sometimes accompanied with lucid intervals. Its progress is rapid, and its termination often unexpected: in some instances the disease ceases suddenly without any previous warning, owing to the effects of a strong moral shock or impression.

Monomania, in its early stage, is liable to be confounded with *eccentricity*: but there is this difference between them. In monomania there is obviously a change of character—the person is different from what he was: in eccen-

tricity such a difference is not remarked; he is, and always has been, singular in his ideas and actions—there is no observable change of character. An eccentric man may be convinced that what he is doing is absurd and contrary to the general rules of society, but he professes to set these rules at defiance: a true monomaniac cannot be convinced of his error, and he thinks that his acts are consistent with reason and the general conduct of mankind. In eccentricity there is the will to do or not to do: in real monomania the controlling power of the will appears to be lost. Eccentric habits suddenly acquired are, however, presumptive of insanity. It will be seen hereafter that the distinction of these states is of considerable importance in relation to the testamentary capacity of persons.

Monomania frequently assumes one of two forms: either the thoughts are lively and gay, or they are oppressed with gloomy melancholy. In the first state, the persons will fancy themselves to be kings and queens, and overflowing with wealth, which they are prepared to distribute with regal profusion; in the second state we find silence, seclusion, and the most heart-rending sorrow. The latter condition, by no means uncommon as a form of monomania, is called *Melancholia* (mania with depression,) or *Lypemania* (λύπε, *sorrow*). Those who are affected with it suppose that they have committed some unpardonable sin, and pass their hours in silence with eyes fixed on vacancy, and in the most gloomy forebodings of temporal and eternal punishment. They do not sleep, and will sometimes neither eat, speak, nor move; force must be used to make them take food and exercise. In some instances no persuasion can conquer their silence; one patient thus affected was not heard to utter a word during four years. If spoken to, they shed tears and violently repulse the person who addresses them. Melancholia frequently leads to an act of suicide or murder, and persons affected with it require very close watching. In the lighter forms of the disease there is no sign of mental aberration, and the patient will go through his usual routine of duty, but always with the same desponding air—so that his occupation seems scarcely to distract his thoughts from the delusion for a single instant. In other cases the delusion is so well concealed that no suspicion exists, until an act of suicide leads to inquiry, and some evidence of strangeness of conduct is then for the first time forthcoming. There is either an entire absence of motive for the act, or the motive is based on a delusion.

CHAPTER 90.

SUICIDAL MONOMANIA OR SUICIDAL MANIA—IS SUICIDE A PROOF OF INSANITY? SUICIDE A FELONY—SUICIDE IN RELATION TO LIFE INSURANCE—CONFLICTING JUDICIAL DECISIONS—HEREDITARY DISPOSITION TO SUICIDE.

Suicidal monomania, or *suicidal mania*, is the name given to that form of insanity which is marked by the predominant idea of self-destruction. Its approach is insidious: it is foreshadowed by impaired appetite and sleeplessness arising from some cause of mental anxiety—too trivial to create alarm. It may proceed either from sudden impulse or be the result of long deliberation; it may be committed with or without apparent motive; it may proceed either from a delusive or a real apprehension of poverty, disgrace [illegible]in. Suicide from sudden impulse is not uncommon: persons have be[illegible] to destroy themselves who had not previously manifested any sym[illegible] *intellectual* disorder. Sir Charles Bell relates that one of the surg[illegible] Middle[illegible] Hospital was in the habit of going every morning to be[illegible]

was known to be a steady and industrious man. One morning the surgeon was conversing with the barber about an attempt at suicide which had recently occurred, and the surgeon observed that the man had not cut his throat in the right place. The barber then inquired, casually, where the cut should have been made; the surgeon pointed on his neck to the situation of the carotid artery. A few minutes afterwards the barber retired to the back of his shop, and there cut his throat with the razor with which he had been shaving the surgeon; he had wounded the carotid artery in the place indicated by the surgeon, and died before any assistance could be rendered to him. Although this act was quite sudden and unexpected, it may have been only the final result of a delusion which had long existed, concealed from others, in the mind of this man—just as the sight of a weapon has often led to its sudden use for the purpose of suicide.

Dr. Forbes Winslow remarks 'that a person is often impelled to self-destruction by the overpowering and crushing influence of a *latent* delusion that has for weeks, and perhaps months, been pressing like an incubus on his imagination. Patients sometimes confess that they have been under the influence of monomaniacal ideas and terrible hallucinations for a long period without their existence being suspected even by their most intimate associates. "For six months," writes one patient, "I have never had the idea of suicide, night or day, out of my mind. Wherever I go, an unseen demon pursues me, impelling me to self-destruction! My wife, friends, and children observe my listlessness and perceive my despondency, but they know nothing of the worm that is gnawing within." Is not this a type of cases more generally prevalent than we imagine?' ('Obscure Diseases of the Brain,' p. 265.) The want of power to shake off this delusion shows clearly that the mind is not in a healthy state—that the person is not sane. ('Ann. d'Hyg.' 1872, 2, 474; and 1866, 1, 238.)

Men who are thus mentally affected generally retain a certain control over their actions; thus they will voluntarily give up pistols, razors, or other weapons by which suicide might be perpetrated. A friend suffering from an attack of suicidal mania, while residing with me in Paris in 1830, delivered to me one night his razors, with a request that I would lock them up and keep them out of his sight, as otherwise he feared that he might destroy himself at any moment. Although he recovered from this attack, he had a relapse, and subsequently destroyed himself by taking prussic acid. Persons labouring under this form of monomania may go to bed perfectly collected, and suddenly awake in the night and destroy themselves by hanging, drowning, or precipitating themselves from a window. These cases probably depend on the persistence of some horrible hallucination which may have occurred in dreaming, and in the reality of which they cannot at the time disbelieve. Some years ago I saw a case of this kind in a man who was a patient at Guy's Hospital. The man attempted to strangle himself in the dusk of the evening with the cord of his bed; he was fortunately saved, and he recovered after having been nearly strangled. On asking him what led him to the attempt, he told me that he suddenly saw a large black figure round his bed (the devil), which by signs and words compelled him to try and hang himself. It appeared that this man had previously shown symptoms of suicidal monomania.

When the impulse to suicide is checked by any great moral shock, it may suddenly disappear. [illegible] friend, to whose case I have above referred, reco- [illegible] under the [illegible] the sudden outbreak of the French Revolution of [illegible] The dan[illegible] he was exposed, while residing with me in Paris [illegible] early da[illegible] volution, for a time at least dispelled the idea of [illegible] ions the case of a man who while hurrying to one [illegible] row himself into the river, was suddenly attacked

by robbers; he made a desperate resistance, and escaped from them. He could not then account for his being where he was, and quietly walked home, having abandoned the intention of destroying himself. There is but little doubt that many acts of suicide would be prevented if circumstances only gave a slight opportunity for reflection; the mind would then be diverted from the dominating idea of self-destruction.

Suicidal mania is susceptible of being spread by imitation, especially when the mode of self-destruction adopted, is accompanied by circumstances of a horrible kind, or by such as to excite great notoriety. The sight of a particular spot where an act of suicide has been already committed will often induce a person, who may hitherto have been unsuspected of any such disposition, at once to destroy himself. Thus a second and a third suicide took place from the Monument near London Bridge, soon after the first had occurred. The same remark may be made of the numerous suicides from Waterloo Bridge. Acts of incendiarism have been also observed to lead to arson in the same or in a neighbouring district; but there is here a criminal as well as a monomaniacal imitation, and experience has clearly shown that there is no check so effectual for this as the rigorous application of the law.

Does the act of suicide necessarily indicate the existence of insanity?—Suicide is often set down as furnishing positive evidence of insanity: a doctrine which commonly finds expression in the verdicts of coroners' juries—not so much from the fact of insanity being thereby established, as that any verdict but this would weigh heavily on the surviving relations and friends of the deceased.

In the opinion of Dr. Davey, the suicidal propensity is in all cases and under all circumstances a positive sign or symptom of disordered mind (insanity). ('Journal of Mental Science,' April 1861, p. 110.) This, however, is not in accordance with the views of many psychologists. In one case a person will fancy that he is constantly watched—that he is oppressed and persecuted by all around him, and that his prospects in life are ruined, when, on the contrary, his affairs are known to be flourishing: he destroys himself under this delusion, in order to avoid imaginary evils. In cases of this description, whether arising from a momentary insane impulse or from delusive reasoning, there cannot be a doubt that the act is one of insanity. It is very different, however, when a real motive is obviously present—as when a person destroys himself to avoid actual disgrace or impending ruin. The motive is here based on a reality—on a real estimate of a man's social position; the results are clearly foreseen, and the suicide calculates that the loss of life would be to him a smaller evil than the loss of honour and fortune. It may be urged that a motive of this kind is itself delusive, and will appear insufficient to the minds of most men; but what known motive is there sufficient to account for parricide, infanticide, or any other crime of the like horrible nature? It appears to me, we must allow either that all crime is the offspring of insanity, or that suicide, like infanticide, may be the deliberate act of a *sane* person. To affirm that suicide is always *per se* evidence of insanity is to affirm, substantially, that there is no criminality in self-murder: for it is impossible to regard that act as a crime which is committed under a really insane delusion. (See 'Ann. d'Hyg.' 1831, 1, 225; also 1872, 1, 430; for some additional remarks on this subject, see Lectures by Dr. Jamieson, 'Med. Gaz.' vol. 46, p. 523, and 'Journal Psychol. Med.' 1850, p. 19.)

The law of England very properly treats suicide as a felony; those who have attempted and failed in the perpetration are held to be sane and responsible agents, unless there should be clear evidence of their (intellectual) insanity from other circumstances: and it is certain, that the evidence required to establish this, must be much stronger than that sometimes admitted in cases of homicide.

Some singular medico-legal cases have occurred, involving the question how far the act of attempting suicide is indicative of insanity. In the case of the *Queen* v. *Rumball* (Cent. Crim. Court, May 1843), a woman was charged with attempting to drown her child. It appeared in evidence that she had fastened her child to her dress, and thrown herself into a canal with the intention of destroying herself. She was rescued, and subsequently tried and convicted of the felony of attempting to murder her child by drowning. Had she not been rescued, and had she succeeded in her purpose of self-destruction, it is probable that the verdict of a jury would have been, as it so frequently is on these occasions, 'Temporary insanity.' In *Reg.* v. *Furley* (Cent. Crim. Court, April 1844), the prisoner was convicted of murder upon similar grounds, but the sentence was subsequently commuted. In *Reg.* v. *Gathercole* (1839), a man was charged with manslaughter, under the following singular circumstances. The prisoner threw himself into a canal for the purpose of drowning himself: the deceased who was passing, jumped in and rescued him, but by some accident he himself was drowned in the humane attempt. The defence was, that the prisoner was at the time insane, and therefore not responsible for the death of the person who attempted to save him; but this was negatived, and the prisoner was convicted. So if a man intending to shoot himself fails, and by accident shoots a bystander, he will be held responsible, unless there be a clear proof of intellectual insanity; the act—the attempt itself, taken alone—will not be admitted as evidence.

If two persons agree to commit suicide and one only dies, the survivor is guilty of murder. In *Reg.* v. *Fisher* (Taunton Spring Assizes, 1865), the prisoner was indicted for the murder of his wife by poison. It appeared from the evidence that they had been married fourteen years, and had lived happily together. The man was well conducted and industrious; but he fell into a desponding state of mind, and thought that by the introduction of machinery into his trade of a shoemaker, he and his wife would be reduced to poverty. He communicated this feeling to his wife; they pondered over it together, and they both agreed to destroy themselves. The man procured a quantity of laudanum, and shared it with his wife; they took about an ounce each. The wife died, but owing to early vomiting the prisoner recovered. It was proved that before marriage the prisoner had been confined in a lunatic asylum: still he had perfectly recovered, and just before this occurrence it was observed that both husband and wife were low and dispirited. There was then no indication of intellectual insanity about him, and the only delusion appeared to be that machinery would ruin his trade. In answer to the charge he said, 'According to my notion I am not guilty of murder.' The case is like that of many others—of two poor, weak-minded, infatuated people agreeing to commit suicide. Under the direction of the judge, the jury returned a verdict of guilty. In *Reg.* v. *May* (C. C. C. Nov. 1872), in which a young German was indicted for aiding and abetting the deceased, a youth named *Nagel*, in an act of suicide, that ruling was thus affirmed: 'Any person in aiding and abetting another in committing suicide is guilty of murder, and it cannot make any difference if the two agree to commit suicide together. In this case, if one of the two causes his own death, and the other is present at the time aiding and abetting him, and attempts also to kill himself but fails, the second is guilty of murder, for the attempt at self-destruction of course does not affect the crime committed against the other.'

Suicide in relation to life-insurance.—It is well known that according to the rules of some English offices a policy of life-insurance is forfeited by the act of suicide; but supposing it to have been really an act of insanity, it has been doubted whether the policy would be legally forfeited. In an equitable view the policy should not be forfeited under these circumstances, any more than

if the party had died accidentally by his own hands. The condition equitably implies that the assured party puts himself to death *deliberately*, and not unconsciously through a delusion as the result of a fit of delirium or an attack of insanity. This question was raised in the case of *Borradaile* v. *Hunter* (Dec. 1841). An action was brought to recover the amount of a policy of insurance effected on the life of a clergyman who threw himself into the Thames from Vauxhall Bridge, and was drowned. The whole case turned upon the legal meaning of the words '*die by his own hands*,' which formed the exception in the proviso to the payment of the policy. At the trial of the case, Erskine, J., directed the jury, that if the deceased threw himself into the river knowing that he should destroy himself and intending to do so, the policy would be void; they had further to consider whether the deceased was at the time capable of distinguishing between right and wrong, or, in other words, whether he had a sufficient knowledge of the consequences of the act to make him a felo-de-se. The jury found that the deceased threw himself into the water intending to destroy himself, and that previous to this act there was no evidence of insanity. They were then directed to take the *act itself* with the previous conduct of the deceased into consideration, and say whether they thought he was at the time capable of knowing right from wrong. They then found that he threw himself from the bridge with the intention of destroying himself, but that he was not then capable of judging between right and wrong. The jury were evidently perplexed with the strict meaning of the words right and wrong: the first part of the verdict made the case one of felo-de-se, the last part made it one of insanity. The verdict was entered for the defendants—*i.e.*, that the deceased was a felo-de-se, and that the policy was therefore void.

This case was subsequently argued before the four judges in the Common Pleas (May 1843). It was then contended for the plaintiff, that according to the terms of the policy there must have been an *intention* by the party assured to 'die by his own hand,' and that an insane person could have no controllable intention. The judges differed: three thought there was no ground for saying that the deceased was affected by an uncontrollable impulse; on the contrary, the jury had found that he threw himself into the river knowing that he should destroy himself and intending to do so. In their opinion the act was one of felo-de-se, and the policy was void. Tindal, C. J., considered that the verdict should be for the plaintiff, thereby leading to the inference that the act of suicide was in this case the result of insanity, and not of a felonious killing, to which alone he considered the exception in the proviso should apply. It is probable if the term '*suicide*' had been inserted in the policy, instead of the words '*die by his own hands*,' that the decision would have been in favour of the plaintiff; for to vitiate a policy from an accidental result depending on an attack of insanity and *flowing directly from that attack*, is virtually vitiating it for the insanity itself! In this respect, it appears that the learned Chief Justice took a sound and equitable view of this question, so important to the interests of those who have insured their lives. It is impossible for a man to enter into a contract *against an attack of insanity*, any more than against an attack of apoplexy! The jury found that the deceased was irresponsible for the act, and it is clear that the insurers and insured intended no more by using the terms 'die by his own hands,' than the act of suicide. By this decision, therefore, the insurers received the benefit of a wider interpretation of the terms than that which either party could have foreseen or contemplated.

The question was again raised in the case of *Schwabe* v. *Clift*, Liverpool Summer Assizes, 1845. ('Med. Gaz.' vol. 36, p. 826.) The deceased, whose life was insured, destroyed himself by taking sulphuric acid; there was clear

evidence of his being at the time in a state of insanity. The jury here, under the direction of Cresswell, J., returned a verdict for the plaintiffs, thereby deciding that the policy was not vitiated by the mere act of *suicide*. The learned judge held that to bring the case within the terms of the exception, the party taking his own life must have been at the time of the act *an accountable moral agent, and able to distinguish right from wrong*. In this instance the term used in the policy was 'suicide,' which according to the learned judge meant 'a *felonious* killing.' Supposing that the insured party was killed by voluntarily precipitating himself from a window while in a fit of delirium from fever, this would be an act of suicide or dying by his own hand; but it surely cannot be equitably contended that his heirs should lose the benefit of the insurance in consequence of an event depending on an accidental attack of a disease which no one could have foreseen, and against which no one could guard? If this principle be not admitted, the decision which must necessarily follow would appear to be against all equity; if it be admitted, then it must apply equally to every case of mental disorder, the proof of the existence of this resting with those who would benefit by the policy.

On an appeal, the judgment in this case was however reversed, the judges again differing. It was argued for the insurers, that if a man retained just enough of intelligence to produce death by competent means, but was deprived of all *moral sense*, the policy was void. Against this view it was urged by one of the judges, that whether the intellect was destroyed altogether or only partially, it could make no difference. If death was the result of disease, whether by affecting the senses or affecting the reason (thus leading to suicide), the insurance office was liable under the policy. If the act was not the act of a sane and reasonable creature, it was not an act of suicide within the meaning of the proviso. Those judges who adopted the opposite view held that the meaning of the words, as introduced into the exception, was—if the party should kill himself *intentionally*: the words were considered to include all cases of voluntary self-destruction. If a party voluntarily killed himself, it was of no consequence whether he was sane or not. The majority of the Court held this view, and a new trial was granted. Had all the judges been present to give their opinions, the decision might have been different; for five had expressed themselves at various times in favour of the view that the term suicide in policies applies, as it ought to do, only to cases in which there is no evidence of insanity; while four had declared their opinion to be, that it includes all cases of 'intentional' self-killing, whether the person be sane or insane. It is difficult to understand how a man in a fit of delirium or insanity can be said to kill himself voluntarily or intentionally. Will and intention imply the judgment of a sane man in regard to civil and criminal acts, but a delirious or really insane person acts under a delusion; and as the law would hold him irresponsible in regard to others, his representatives should not suffer for an act which he was himself incapable of controlling. (See 'Law Times,' July 18, 1846, p. 342.)

The decision in this case is of great importance to persons whose lives are insured, for it may be made to govern others; and on this principle, a man attacked with delirium, and who during the fit, precipitated himself from a window and was killed, would be declared a suicide within the meaning of the proviso, and a policy of insurance of his life would be *ipso facto* void. It will be perceived that the law, as interpreted by a majority of the judges, is that whenever a person destroys himself *intentionally*, whatever may be the state of his mind, the policy becomes void. It also appears that, according to this legal view of the question, a person may have and exercise such an intention although undoubtedly *insane*. Whether he has been found so under a Commission, or a verdict to this effect has been returned by a Coroner's Jury, is there-

fore unimportant. It must be proved by those who would benefit by the policy, that the party had died from his own act but without *intending* to destroy himself. If a man take poison, or shoot himself, or commit any other act leading to his own death, it must be shown that it was the result of *accident*, and not of design on his own part. Some Insurance offices now insert in a contract a proviso by which, whether the person be found *felo-de-se* or not, the policy shall be forfeited: but they reserve to themselves the right of returning a part or the whole value of the policy, calculated up to the day of death. In the meantime they have the power of taking the full benefit arising from an act of suicide committed during a fit of delirium or insanity, in which, as medical men know, there can exist no controllable intention, no freedom of judgment, and no real exercise of will. (See case 'Prov. Med. Jour.' Aug. 9, 1848, p. 428.)

There is a form of suicide not unlikely to present itself for consideration—namely, where a man, in the habit of using a powerful drug for medicinal purposes, takes a large dose while in a state of intoxication and dies. In May 1857 a *Mr. George Fife* died from an overdose of morphia, and it was proved to the satisfaction of the jury that this must have been taken while he was intoxicated. In such a case a man may have no sane intention of destroying himself, yet he dies by his own hands. As drunkenness does not excuse or justify any act of homicide, so it would not probably be allowed to affect the question of suicide; and death under such circumstances would probably be held to be a felonious killing.

From these cases one fact is clear—the act of suicide is not treated by the law as a necessary *proof of insanity*; and therefore, the ingenious arguments which have been held on this subject have but little interest for a medical jurist in a practical point of view. It has been elsewhere stated that acts of suicide have been mistaken for homicide, merely because the deceased had expressed no *intention* of destroying himself, and had manifested no disposition to the act by his previous conduct. This, however, is a fallacious view of the subject, since suicide from sudden impulse is by no means unfrequent; and even when the act bears about it marks of deliberation, it is not to be expected that a person should previously announce his intention, for this would be a sure way of defeating his object.

If, as it is alleged, the act of suicide was in all cases the offspring of insanity, suicide should be frequent among the insane. Experience, however, is not in favour of this assumption. The Report of the Commissioners of Lunacy for 1850 shows that there were then confined as lunatics 15,079 persons, while the suicides for the year among this large number amounted to only eight, of which six were perpetrated by strangulation. As mechanical restraint is either abolished or considerably diminished in most asylums, lunatics have now much more liberty than formerly, and yet suicides among them are comparatively rare. This favourable result must be in part ascribed to active superintendence and watching.

The tendency to suicide appears to be in some cases hereditary. Dr. Burrows relates an instance in which this propensity declared itself through three generations:—In the first the grandfather hanged himself: he left four sons—one hanged himself, another cut his throat, and a third drowned himself in an extraordinary manner, after having been some months insane: the fourth died a natural death, which, from his eccentricity and irregularity of mind, was scarcely to be expected. Two of these sons had large families: one child of the third son died insane, two others drowned themselves, another became insane and made the most determined attempts on his life. Several of the progeny of his family, being the fourth generation, when they had arrived at the age of puberty, showed a tendency to the same fatal propensity.

Other forms of monomania are mentioned by medico-legal writers, as *pyromania* and *kleptomania*: the first signifying a mental or moral perversion, manifested by a propensity to incendiarism; the second, the same manifested by a propensity to theft. The Germans and the French admit these forms of monomania, and consider that when they are proved to exist, they ought to be allowed as defences to charges of arson and theft. This is a point which will require consideration hereafter.

Some have held that monomania is capable of being transmitted by imitation in all its varieties. It is certain that weak and enthusiastic minds are often prone to take up delusions connected with political or other doctrines, which perhaps in the first instance emanated from the brain of a monomaniacal fanatic. The same delusion may be taken up by many maniacs successively: thus one maniac pretender to the throne of a country will be followed by many other pretenders, equally insane; one person who announces himself as a prophet or a spiritualist will have his wildest fancies credited by an ignorant multitude. We can only explain these cases by supposing that there is an inherent weakness in some minds, which renders them easily susceptible of delusion. Such cases are generally observed among the most ignorant and credulous, but sometimes they are found among the educated and well-informed classes of society.

CHAPTER 91.

DEMENTIA—A CONSEQUENCE OF MANIA—ITS SUDDEN OCCURRENCE FROM FRIGHT—DISTINCTION FROM MANIA—IDIOCY ON CONGENITAL DEFICIENCY—CRETINISM—IMBECILITY—SENILE DEMENTIA—POST-MORTEM APPEARANCES IN CASES OF INSANITY.

DEMENTIA.

THIS is a state which, although sometimes confounded with mania, is very different in its characters. Dementia, when confirmed, consists in a total absence of all reasoning power, and an incapacity to perceive the true relations of things; the language is incoherent, and the actions are inconsistent; the patient speaks without being conscious of the meaning of what he is saying, memory is lost, and sometimes the same word or phrase is repeated for many hours together; words are no longer connected in meaning, as they are in mania and monomania. This state is often called *fatuity*; it is a not unfrequent consequence of mania or monomania.

Dementia varies in degree. The disordered mind of aged persons is one form of dementia; here we find memory and some mental power, although the memory is restricted to objects long since past, and the exertions of the mind are only momentary. Some persons in dementia are quiet, others are in constant motion as if in search of something. There is generally a strong disposition manifested to collect all kinds of useless articles, which are hoarded up as if they were of great value. In some instances this disease comes on gradually—the faculties, both normal and intellectual, decay one by one; while in other instances, although much more rarely, dementia may occur suddenly from a violent shock or impression on the mind. This was the case with the young lady referred to by Mr. Travers, who suddenly fell into dementia from finding in her bed a skeleton, which had been placed there by some person to frighten her; in the morning she was found playing with the fingers of the skeleton, and all reasoning power was extinct. The following instance of dementia occurring suddenly from violent emotions is related by Marc: 'During

the reign of terror in France, an artilleryman proposed to the Council of Public Safety, a new species of cannon which was to have the most deadly effects in war. A day was appointed for the trial of this invention at Meudon, and Robespierre wrote a letter to the inventor, thanking him for his discovery in such flattering language that the poor man became motionless on reading it. His mind was gone, and he was conveyed to a lunatic asylum in a state of confirmed dementia.' ('De la Folie,' vol. 1, p. 269.) There is something fearful in the thought that the powers of the mind, which it may have taken many years to build up, may be thus destroyed in a moment by strong emotion.

Dementia may be acute or chronic, remittent or intermittent. The countenance of the patient is generally pale, vacant, and without expression, the look vague and uncertain, and tears are abundantly shed from the slightest causes.

The following may be taken as the most striking differences between mania and dementia. In mania there is an incoherence of ideas, but depending on too great rapidity of thought and excitement of the intellectual powers; in dementia there is a want of ideas, and the incoherence depends on the loss of the power of connecting them, owing to defect of memory; volition is lost, and the brain seems in a state of collapse. (Esquirol, 'Maladies Mentales,' vol. 2, pp. 224 and 232.) In fact, in dementia there is a more or less complete abolition of the moral, intellectual, and voluntary powers; in mania, and also in monomania, they are in a state of perversion. Dementia is often a consequence of these states, and sometimes alternates with them. The annexed illustration (fig. 188) represents a woman in a state of dementia; she did not speak, and commonly maintained a sitting posture; she was of gluttonous habits, and ate ravenously anything upon which she could lay her hands; she was unable to dress herself, and appeared not to remember even the cell in which she was confined, or to know anything that was passing around her.

Fig. 188.

Portrait of a woman in a state of dementia (Esquirol).

Fig. 189.

Portrait of a male idiot, æt. 20, in the Bicêtre (Esquirol).

IDIOCY. IMBECILITY.

Idiocy is the *dementia naturalis* of lawyers. The term idiot is applied to one who from original defect has never had mental power. Idiocy differs from the other states of insanity in the fact that it is marked by congenital deficiency of the mental faculties. There is not here a perversion or a loss of what has once been acquired, but a state in which, from defective structure of the brain, the individual has never been able to acquire any degree of intellectual power to fit him for his social position. It commences with life and continues through it, although idiots are said rarely to live beyond the age of thirty. (Esquirol, 'Maladies Mentales,' vol. 2, p. 284.) The deficiency of intellect is marked

by a peculiar physiognomy, an absence of all expression, and a vague and unmeaning look (see fig. 189); there is no power of speech, or only the utterance of a cry or sound; there is no will, but the actions of these beings appear to depend upon impulse, a power of imitation, or mere animal instinct; they recognise no one, they remember no one, and the mind seems to be a blank. Such is the picture of what may be termed a perfect idiot. In Switzerland this state of idiocy is often accompanied with great bodily deformity, and enlargement of the thyroid gland, both in males and females; it is there termed *cretinism*. Cretins resemble monsters more than human beings. A confirmed idiot may in almost all cases be recognised by the expression of countenance and the form of the skull.

Idiocy is not always so complete as this description would represent. There is a state scarcely separable from idiocy in which the mind is capable of receiving some ideas, and of profiting to a certain extent by instruction. Owing, however, either to original defect, or to a defect proceeding from arrested development of the brain as a result of disease or other causes operating after birth, the minds of such persons are not capable of being brought to a healthy standard of intellect, like that of an ordinary person of similar age and social position. This state is called *imbecility*; it is nothing more than idiocy in a minor degree. In common language persons labouring under it are often called idiots, but for the sake of precision in medical language they are more correctly described as imbeciles. (Esquirol, op. cit. vol. 2, p. 289.) In imbecility the physical organization differs but little from the ordinary standard; the moral and intellectual faculties are susceptible of cultivation, but to a less degree than in a perfect man, and even this capacity does not exist beyond a certain point. Imbeciles never attain a normal standard of intellect, and when placed in the same circumstances as other men they never make a similar use of their intellectual powers. They can form no abstract ideas, and sometimes their capacity to receive instruction is limited only to a certain subject—as, for instance, arithmetic. Their memory and judgment are limited, although sometimes the former is remarkably strong. They express themselves in a hesitating manner, and differently from other men; they require time to perceive the relations of objects which are immediately perceived by sane persons. The degree in which imbecility exists is well indicated by the power of speech. In idiots there is no speech, or only an utterance of single words; in the better class of imbeciles the speech is often easy and unaffected, while there is every grade between these two extremes. Some have arranged imbeciles in classes, according to their capacity to receive instruction—others according to their power of speech; but such divisions are practically without value: each case must be judged by itself.

The precise boundary between idiocy and imbecility cannot be defined. The major degrees of imbecility approach so closely to those of idiocy, that there is no distinction between them, and in a practical view no distinction is required. Idiocy has been here described as that condition in which the congenital defect is not susceptible of being removed by any kind of instruction; but many medico-legal writers apply the term idiot to one who does manifest capacity to receive instruction, although in a low degree. The difference is immaterial so long as the meaning of the word is understood.

How are the minor degrees of imbecility to be distinguished from insanity? This is a question by no means easy to answer, for the reason that sane persons differ remarkably in their mental power to receive instruction, to retain what they have been taught, and to allow them to make a practical use of it in the world for their own benefit. How many persons pass through life and advance in the world who are yet undoubtedly weak-minded, and who have the reputation among all who know them of being so! The truth is, the lowest

degrees of intelligence legally constituting sound mind are not separable from the minor forms of imbecility, so far as the moral and intellectual faculties are concerned. By running this distinction too closely, one half of the world might easily reason itself into the right of confining the other half as insane.

Idiocy and imbecility must not be confounded with mania and monomania. In idiots and imbeciles ideas are wanting, and the power of thought is absent or deficient; in maniacs and monomaniacs the ideas flow freely, but they are perverted, and the power of thought is irregular and uncontrolled. In idiocy and imbecility we do not meet with the hallucinations and illusions which constitute the main features of mania and monomania. Idiocy is much more likely to be confounded with dementia, and indeed when dementia is confirmed and complete (*fatuity*) there is no appreciable difference, for in neither state is there any evidence of the exercise of mental power. In idiocy no ideas have ever been formed; in imbecility they have been partially formed, but arrested; in dementia they have been more or less completely formed, but have subsequently become entirely obliterated. It is important to remember that in idiocy and imbecility there is no gradual loss or impairment of faculties, as is generally observed in dementia; the person is what he always has been—mentally weak and unsusceptible of any great degree of improvement by instruction.

From these remarks it will be perceived that imbecility is a state existing from birth or from childhood; it may supervene from disease after birth, in a child in whom there was no reason to suspect its existence, although it is more common to find the deficiency congenital. The term is often applied to express that weakness of the mental powers which takes place in the aged at the close of life, even when the mind has been well developed in maturity. Thus we speak of the imbecility of age: this is truly nothing more than a state of *senile dementia*, and to apply to it the term 'imbecility' tends to create confusion.

Such, then, are the four medical forms under which insanity or mental aberration may present itself to our notice; and although there are occasionally mixed states, as of mania and dementia (*incoherency*), yet it is an important feature in the distinction of mental disorders, to observe that in real insanity, the characters presented to us in any given case do not vary materially from those which have been described as peculiar to each of these states. This medical classification, it must be remembered, is made for the sake of convenience, because by it a practitioner may be led to form a safe diagnosis of the real state of mind of a person. It is not recognized in any of the law proceedings connected with the insane: for in these the term *unsoundness of mind*—comprehending lunacy, idiocy, imbecility, and all forms of mental weakness—is almost exclusively employed. In adopting this arrangement, a medical jurist must take care not to fall into an error which has been sometimes committed—*i.e.* of pronouncing a person to be of sound mind because his case cannot be easily placed in any one of these four great divisions of insanity. This would be as serious an error as that formerly committed by some law-authorities—namely, of giving restricted and incorrect definitions of lunacy, idiocy, and imbecility, and then contending that whoever was not a lunatic, idiot, or imbecile, according to these arbitrary legal definitions, must be a person of sound mind.

Appearances after death.—In some cases a medical practitioner may be required to state whether certain appearances found in the brain of a deceased person do or do not indicate the past existence of insanity or imbecility. Such a question is only likely to arise in chronic cases, in which the past existence of insanity from oral testimony may be disputed. (Case of *Stulz*, Prerog. Court, 1852.) The appearances commonly met with on an inspection of the head are—thickening of the bones of the skull, close adhesion of the dura

mater (the lining-membrane), with great congestion of the pia mater, and opacity and thickening of the arachnoid membrane. (See Illustrations, vol. 1, p. 629.) There is a general fulness of the bloodvessels of the brain, with remains of old cysts, hardened deposits, or even abscesses in various parts of the cerebral substance. Inferences from the existence of these appearances in the brain must be drawn with caution, because it cannot be said that they necessarily indicate insanity; nevertheless, such chronic changes must be considered as producing greater or less derangement of the mental functions; but the actual degree to which the impairment has existed ought properly to be determined by evidence of the conduct and actions of the deceased during life. In a communication made by Dr. Webster to the Medico-Chirurgical Society in April 1855, there is a statistical summary of the appearances met with in the examination of the bodies of 290 insane patients. In 226 cases the pia mater was infiltrated; in 207 effusion had taken place in the ventricles; in 184 fulness of the bloodvessels in the brain or membranes was observed; in 117 the arachnoid membrane was thickened and opaque; in 64 the colour of the brain appeared changed from its natural hue; in 51 the bloody points (*puncta cruenta*) were large and numerous upon the cut surface of the medullary substance; whilst in 40 instances blood was effused, sometimes to a considerable extent, within the cranium. This effusion had evidently been the immediate cause of death in most of the patients. From these data it appears that—first, infiltration of the pia mater; secondly, effusion of fluid in the ventricles; and thirdly, fulness of the cranial vessels, are the principal as also the most frequent diseased alterations of structure observed in patients who die whilst suffering under symptoms of mental disorder.

As neither the symptoms nor the duration of the insanity is given, it is difficult to apply these results to special instances. In 35 cases of insane patients who died with the complication of general paralysis, Dr. Morrison found the most frequent lesions to have been—in 18, unnatural thickness of the skull; in 33, opacity and thickening of the membranes of the brain; in 16, infiltration of the arachnoid membrane; in 17, vascularity of the pia mater; in 25, vascularity of the convolutions; in 18, softness of the brain; and in 35, effusion of serum into the ventricles. The appearances in the other cases were not very characteristic. It was observed that in about one-fourth of the cases there was adhesion of the dura mater to the skull. ('Lectures on Insanity,' p. 480.) In the case of *Roberts* v. *Kerslake* (Warwick Aut. Assizes, 1854), the main question was whether thickness of the skull, with certain appearances in the brain and its membranes, did or did not indicate disease of long standing, as well as insanity at the particular date at which a will was made. Dr. Conolly and I considered that the appearances were not inconsistent with the supposition that the testator was sane at the time of making his will. ('Journal of Psychological Med.' Oct. 1854, p. 573.) The reader will find some valuable information on this subject in a paper by Mr. Fisher ('Med. Gaz.' vol. 37, p. 657); and in another by Mr. Eccleston ('Med. Gaz.' vol. 47, p. 170); also in some contributions to the 'Journal of Psychological Medicine' (1850, p. 521, and 1851, pp. 236 and 383), by Mr. Holmes Coote. See also Dr. Jamieson's Lectures, 'Med. Gaz.' vol. 46, p. 652; and a paper by Dr. Webster, 'Journal of Psychol. Med.' 1849, p. 483; by Dr. Farre, in the same volume, p. 533; and by Dr. Hitchman, in the volume for 1850, pp. 228, 362, 501.

CHAPTER 92.

INSANITY — ITS HEREDITARY TRANSMISSION — CAUSES OF INSANITY — FEIGNED INSANITY—FEIGNING OF MANIA—DETECTION OF IMPOSTORS—FEIGNED DEMENTIA —CASE OF LADY MORDAUNT—STATISTICS OF INSANITY.

Hereditary transmission.—The hereditary transmission of insanity has sometimes presented itself as a medico-legal question in relation to the criminal responsibility of the insane. According to Chitty, it is an established rule of law, 'that proof that other members of the same family have decidedly been insane is not admissible either in civil or criminal cases.' ('Med. Jur.' vol. 1, p. 352.) But recent decisions have shown that this statement is not correct. In *Reg.* v. *Ross Touchet* (1844), in which the accused was tried for shooting a man, and acquitted on the ground of insanity, Maule, J., held that evidence that the grandfather had been insane might be adduced, after it had been proved by medical testimony that such a disease is often hereditary in a family. It was also admitted in *Oxford's* case, the prisoner having been tried for shooting at the Queen ('Law Times,' Oct. 26, 1844), and since that date it has been admitted in a number of cases in which insanity was urged as a defence on a charge of murder. In some recent trials there has been a tendency to rely upon hereditary predisposition as almost the sole proof of insanity in the criminal. In the case of *Christiana Edmunds* (*post*), convicted of the crime of poisoning on an extensive scale, no evidence of intellectual insanity or of homicidal impulse could be found. There was a motive; an endeavour to fix the crime upon others; great skill in its perpetration; concealment, with a full knowledge of the consequences of the act, of the punishment attached to it; and an endeavour to avoid this punishment by a false plea of pregnancy. In short, the conduct of the woman throughout was that of a sane criminal. The jury found her guilty; but in consequence of proof being furnished that many members of her family had suffered under insanity in some form, it was supposed that there might be some latent degree of insanity in her case, not discoverable by the ordinary methods of examination. This led to the commutation of her sentence to confinement in an asylum for life.

In the case of *Arthur O'Connor*, who made an attempt on the life of the Queen in 1872, hereditary taint was one of the strongest points put forward in the defence, but it failed to satisfy the Court, and the prisoner was convicted. In the opinion of Dr. Tuke this youth was so far insane as to render him irresponsible for the daring act. ('Lancet,' 1872, 1, 570.) This kind of evidence has been frequently rejected in other cases, and it is not admitted in the law of Scotland. (*Gibson's* case, Edinburgh, December 1844.)

There can be no doubt, from the concurrent testimony of all writers on Insanity, that a predisposition to this disease is frequently transmitted from parent to child through many generations. The malady may not always show itself in such cases, because the offspring may pass through life without being exposed to any exciting cause; but in general it readily supervenes from very slight causes. M. Esquirol has remarked that this hereditary taint is the most common of all the causes to which insanity can be referred, especially as it exists among the higher classes of society. Among the poor, about one-sixth of all the cases may be traced to hereditary transmission; and other authorities have asserted that in more than one-half of all cases of insanity, no other cause can be found for the malady. As we might suppose, children that are born before insanity manifests itself in the parents, are less subject to the disorder than those which are born afterwards. When one parent only is insane,

there is less tendency for the predisposition to be transmitted than when both are affected; but according to Esquirol, this predisposition is much more readily transmitted through the female than through the male parent. Its transmission is also more strikingly remarked when it has been observed to exist in several generations of lineal ancestors; and, like other hereditary maladies, it appears to be subject to *atavism*—*i.e.* it may disappear in one generation and reappear in the next. In the case of *Arthur O'Connor* (*suprà*), this was put forward as evidence by Dr. Tuke. Feargus O'Connor, the grandfather, was undoubtedly insane, but the father of the prisoner was not. In such cases there should be some evidence to show that symptoms of insanity existed in the persons charged with crime. Further, the children of drunken parents, of those who have been married late in life, or who are of blood-relationship, are said to be more subject to insanity than children born under other circumstances. When insanity is transmitted by hereditary descent, it appears often about the same age, under the same form, and is induced by the same exciting cause in the offspring as in the parent. This it is proper for a medical jurist to bear in mind in reference to the plea of insanity in criminal cases. (See 'Journal of Psychol. Med.' 1848, p. 264.)

The following instance of the effects of hereditary transmission in the family of a tailor occurred to Dr. Millar. The wife of the man had always been an epileptic, and had had eighteen children, of whom, at the time to which he refers, six were living, all more or less affected with epilepsy and congenital deficiency; six had died at various ages of convulsions, and six were prematurely born dead during her own attacks. ('Hints on Insanity,' p. 57.) As a rule, he considers that the father transmits to the son, and the mother to the daughter. (See cases by Dr. Liman, Casper's 'Vierteljahrsschrift,' 1865, 1, 285.)

The extent to which the disposition to insanity prevails through families is much greater than is commonly supposed; but there is great difficulty in getting at the truth, unless the information can be obtained from some friend who is well acquainted with the family. There is no point upon which persons in every station of life are more desirous of concealment; and relatives are always ready to deny the existence of a family taint. They will admit, perhaps, that some member of the family has been a little eccentric—nothing more than that; one has only had a brain-fever; another delirium after her confinement, which they say goes for nothing; or perhaps it will be admitted that some child has had congenital deficiency. ('Millar's Hints on Insanity,' p. 10.) Dr. Millar states, as the result of his experience, that he has good reason for believing that many of the reputed attacks of brain-fever have been nothing more than cases of acute mania. In spite of the existence of a strong hereditary taint, however, insanity rarely manifests itself except when the exciting causes leads to the loss of natural sleep.

Causes of Insanity.—The causes of insanity may be either moral or physical. A full account of them, with the relative numbers attacked, has been published by Dr. Hawkes. (See 'Lancet,' 1872, 2, 666.) Among the ordinary *causes* may be enumerated severe domestic affliction—loss of near relatives or friends—great pecuniary losses—disappointments—long watching—anxieties either as to the health of friends or success in business—severe and long-continued mental exertion—excessive study—ambition—the puerperal state—amenorrhœa—masturbation—drunken habits—over-excitement on the subject of religion or politics, and in general all those disorders which cause depression of health and spirits, and which are accompanied by loss of sleep. About one-third of the existence of man is passed in sleep, and this quiescence or repose is as necessary to mental as it is to bodily health. One of the earliest symptoms of insanity is extreme wakefulness. (Millar, op. cit. p. 9.)

Blows on the head, accidental falls, and strokes of lightning, have been said to operate as physical causes of insanity. It is very probable, in reference to these mechanical injuries, that but for an hereditary taint in the person they would not be followed by an attack of insanity.

FEIGNED INSANITY.

Insanity is frequently feigned by persons accused of criminal offences in order to prevent a trial, or to procure an acquittal or a discharge. In the first place, when feigning is suspected, it will be proper to inquire whether the person has any *motive* for pretending to be insane. In reference to persons charged with crime, it is necessary to remember that insanity is rarely assumed until *after* the commission of the crime and the actual detection of the criminal. No one feigns insanity merely to avoid suspicion. In general, as in most cases of imposture, the part is over-acted—the person does either too much or too little, and he betrays himself by inconsistencies of conduct and language which are never met with in cases of real insanity. There is commonly some probable cause to which insanity may be traced, but when the malady is feigned there is no apparent cause: in this case the appearance of the assumed insanity is always sudden—in the real malady, the progress of an attack is generally gradual; and when the attack is really sudden, then it will be found to be due to some great moral shock or other very obvious cause. We should observe whether for some time previously there has been any marked change of character in the person, or whether his conduct, when he had no interest to feign, presented any of the usual indications of insanity. Some difficulty may arise when fits of eccentricity or strangeness of character are deposed to by witnesses; but these statements may be inconsistent with each other, and the previous acts of the person may bear no resemblance whatever to those performed by him in the recently assumed condition. A difficulty of this kind rarely presents itself, since in an impostor no act indicative of insanity can be adduced for any antecedent period of his life: it is only *after* the perpetration of a crime and its detection, that any action approaching to the habits of the insane will be met with. In real insanity the person will *not* admit that he is insane; in the feigned state all his attempts are directed to make you believe that he is mad; and an impostor may be induced to perform any act, if it be casually observed to another in his hearing that the performance of such an act will furnish strong evidence of his insanity.

I am indebted to a learned judge, now deceased, for the following note on feigned insanity:—"It may be safely held that a person feigning insanity will rarely if ever try to prove himself to be sane; for he runs the great risk of satisfying others that he is sane, a conclusion which he rarely desires to avoid. But there is no better proof, in general, that the insanity (supposing other evidence of it to be strong) is real, than keen and eager attempts by the accused to prove that he is sane, and strong and indignant remonstrances against being held to be insane, although they would protect him against trial and punishment. A trial took place at the Chelmsford Lent Assizes, 1873, in which a clergyman was indicted for a violent and unprovoked assault on a policeman. When a suggestion was made that his conduct was that of an insane person, he protested strongly against the jury returning a verdict to that effect. He would not allow this defence to be set up for him. His conduct, however, in Court, left no doubt that he was then of unsound mind, as well as when he committed the assault, and the jury in spite of his strong protestations, acquitted him on the ground of insanity. The Lord Chief Justice stated that he had formerly been confined as a lunatic. The conduct of an impostor would have been the reverse of this. In a case which occurred in Edinburgh some years since, a

doubt existed whether the person was feigning insanity or not. Those who were about him, and had charge of him in gaol, were satisfied, from his clearness and apparent coherence, that he was quite sane, and that what he exhibited was merely eccentricity or simulated attemps to act as a madman. Insane he certainly was, however, beyond all doubt; but he fought the point of his sanity most bravely in Court, and made very clear and quick remarks on the evidence of the medical men, who had no doubt of his insanity. When one physician of great experience with insane persons stated that he thought him quite incapable of giving information to counsel and agent for conducting his defence, he said instantly, 'Then why did you advise me to apply to, and see counsel and agents?'"

Mania is perhaps more frequently assumed than any other form, because the vulgar notion of insanity is, that it is made up of violent action and vociferous and incoherent language: but mania rarely comes on suddenly, or without some obvious cause. A maniacal patient is also equally furious by day and night, while an impostor is obliged to rest after his violent exertions. Dr. Burrows recommends that close attention should be paid to the expression of the eye. The mobility of the features may be as rapid as the imagination is vivid; but when every feature may vary, or be kept under control and be steady, the eye will still indicate the erring thought—its expression cannot be easily assumed. There is about the eyes in mania a restlessness which cannot fail to attract attention; the patient sleeps but little, and the sleep is disturbed—an impostor sleeps on as soundly as a healthy person. The violence of a maniac continues whether he is alone or not, while the impostor acts his part only when he thinks he is observed: hence the impostor may be detected by watching him when he is not aware that an eye is directed upon him.

In investigating a case, some stress has been laid on the fact that assumed insanity commonly appears suddenly and without probable cause; but while this may be allowed to have a general influence in forming a medical opinion, it is proper to bear in mind that the actual commission of a crime has sometimes suddenly led to an attack of mania in a previously sane person. Dr. Pagan has related a singular instance of this kind. Two men were committed to prison on a charge of theft, and the officers requested a poor man, who was a shoemaker, to assist them in conveying the prisoners. This man took a gun with him for better security. During the journey one of the prisoners leaped from the cart and ran off. The officers called to their assistant to fire, and he, thinking himself warranted to do so by their order, fired, and wounded the prisoner severely in the back and loins. The man who fired the gun was himself immediately committed to gaol as a criminal, and this event made such an impression upon him that he became violently maniacal, but it was supposed that he was only feigning insanity. When scarcely recovered he was tried for the offence, convicted, and sentenced to six months' imprisonment. ('Med. Jur. of Ins.' p. 82.) This case proves that a person may really be attacked with mania under circumstances in which a justifiable suspicion would be likely to arise that he was feigning.

The feigning of *monomania* is a matter of some difficulty: it would be easily susceptible of detection. As in mania the part would be overacted, and an impostor would thus betray himself. *Dementia* is more easily feigned:—in general this state comes on slowly, and is obviously dependent on organic changes, as old age, apoplexy, paralysis, or hemiplegia; or it is a consequence of recurrent mania or monomania. As this form of insanity consists in an entire abolition of all mental power, so the discovery of any connected ideas, reasoning or reflection, either by language, writing, or gestures, would at once show that the case was not one of real dementia. *Idiocy* and *Imbecility* could hardly be feigned successfully, because these are states of congenital defici-

ency, *i.e.* they must have existed from birth. Hence it would be easy to show, by reference to the antecedent life of a person, whether he has or has not always been such as he represents himself. There is another fact worthy of notice. An impostor cannot long maintain his part. If the case is really of long duration without material change in symptoms and conduct, it is more likely to be one of real than of feigned insanity. The difficult cases of feigned insanity are really limited to those forms of the malady which are liable to attack a person suddenly. But for a sudden attack of real insanity there should always be some obvious cause:—the non-existence of this, with the presence of a strong motive for deception, will justify a suspicion that the malady has been assumed.

The following case of feigned insanity was the subject of a trial in London some years since. A married woman aged fifty was charged with uttering a forged cheque: she had craftily procured the signature of a person under a false pretence, and then forged his name to the cheque. When required to plead she made no answer, and appeared unconscious of the question. She took up some flowers placed in the dock, and crumbled them in her fingers, which were in continual motion. She stared wildly at times, changing her position—turned her back on the Court—muttered indistinct exclamations, and made a humming noise. She was placed under some restraint in order to prevent her from jumping out of the dock. The first question which the jury was directed to try, was whether she was of 'sound mind or not,'—it being a rule of law that no insane person can be called on to plead to a criminal charge. Evidence was then adduced to prove that at previous periods of her life she had used incoherent language and was strange in her conduct. It was also shown that her mother, aunt, and sister had been insane. Dr. Uwins deposed that at first he thought the prisoner was feigning, for she appeared to be fully aware of the importance of the plea of insanity; but when he heard that other members of her family had had the disease, he was induced to think her insane and therefore not accountable for her actions. Another medical witness, who had attended her family professionally, and had known the prisoner long, thought she was not insane, although he allowed that the apprehension of a criminal charge might bring on an attack of insanity in a mind subject to aberration. Other witnesses deposed that they had never observed any acts of insanity about her; and it was further proved that she was well acquainted with the method of drawing and procuring money on bills. When arrested she tried to escape from the officer, and to conceal the money which she had procured by means of the forged cheque. The surgeon of the gaol thought she was feigning; he visited her daily, and he observed that her manner was changed so soon as she saw him. When asked what counsel she would employ, she returned a rational answer, saying that 'others would take care of that:' when charged with feigning she made no observation. She put on a wild look when she knew that she was observed, but when privately watched her behaviour was like that of a rational person: she generally slept soundly. The jury found that she was of sound mind; she was then called on to plead to the charge, but she refused—a circumstance rarely observed in the conduct of a really insane person; she was tried, and found guilty. There could be no reasonable doubt that this woman was an impostor, and that she feigned insanity well knowing what would be the result of the plea, if admitted. Two circumstances rather tended to complicate the case: 1st, the proof of hereditary predisposition; and 2ndly, her assumed silence, whereby she did not easily betray herself. In regard to hereditary predisposition, although valuable as collateral evidence, it cannot of course be allowed to outweigh general facts indicative of perfect sanity. This case proves the fallacy which is liable to arise from the unrestricted admission of such evidence. With regard to the taciturnity or 'silence,' there is no symptom more easily assumed. A person has only to

keep the mouth shut and not heed the questioner, and this requires but little art or exertion. It is also easy to stare wildly and put on an aspect of unconsciousness. Observation of the countenance, especially of the eyes, while others are conversing on matters affecting the reputed criminal, will show whether there is an intelligent understanding of what is said in his presence or not. Dr. Stahmann has pointed out, with respect to the simulation of the dirty habits of the insane, that an impostor will be dirty in his cell or bed but rarely in his person, while in real insanity the patient is usually dirty in both. ('Ann. d'Hyg.' 1867, 2, 430.)

If the person can write, he might be induced to draw up an account of himself, which would certainly indicate the real state of the mind. Dr. Marcé has shown that in the different forms of real insanity the writing presents characters which cannot easily be mistaken. ('Ann. d'Hyg.' 1864, 1, 379.)

There is one simple rule to be followed in an examination. We should never prejudge the case, or go with a set purpose to find proofs of sanity or insanity in accordance with the views of those who consult us. As Dr. Wilson advises, in reference to the detection of malingerers, we should receive and weigh every statement with due care and attention, so as to protect the patient against unjust suspicions, and at the same time secure his confidence. ('Lancet,' 1872, 1, 93.) Dr. Born, of Görlitz, has reported a case in which the question of simulation was raised, but he affirmed, after a minute investigation of all the circumstances, that it was really a case of monomania. (Casper's 'Vierteljahrs.' 1865, 2, 308.)

At the Lewes Winter Assizes, Dec. 1856 (*Reg.* v. *Ball*), the prisoner, a ticket-of-leave convict, was convicted of housebreaking, and sentenced to fifteen years' transportation. The case of this man shows how easily medical practitioners who have had but little experience of insanity, may be deceived by skilful impostors. After the prisoner had been committed to gaol he simulated madness so successfully that he deceived three of the visiting justices and two medical men; and a certificate was about to be signed for the removal of the supposed unfortunate lunatic to an asylum, when the deception was discovered by the impostor having made a confidant of one of his fellow-prisoners. He had been convicted of robbery at Leicester in 1851, and sentenced to ten years' transportation: he was sent to Millbank Prison, where he feigned insanity and succeeded in deceiving the medical officers there: they certified that he was a lunatic, and he was accordingly removed to Bethlehem Hospital, where he remained two years; he subsequently received a ticket-of-leave. For a singular case in which a verdict was returned against strong medical evidence of alleged insanity, see 'Lancet,' January 18, 1845, p. 70. See also 'Med. Gaz.' vol. 47, p. 49; 'Jour. Psychol. Med.' 1848, p. 277; also 'Ann. d'Hyg.' 1829, 2, 366, 377; 'Ann. d'Hyg. 1847, 2, 230; and Casper's 'Vierteljahrsschrift,' Jan. and April 1864, pp. 50 and 225.

Among modern cases in which that form of insanity known as dementia was alleged to have been feigned is that of *Lady Mordaunt* (*Mordaunt* v. *Mordaunt*, Divorce Court, February 1870). In consequence of a confession made by this lady soon after her confinement that she had committed adultery with certain persons, her husband took proceedings against her for a divorce. At the date at which she was served with notice of the writ, the 30th April 1869, it was alleged that she was insane, and that from mental incapacity she was unfit or unable to instruct an attorney for her defence. On the part of the husband, it was alleged that she was really fit and competent, and that the state of insanity was assumed in order to avoid the exposure of a public trial. ('The Mordaunt Divorce Case, Official Report,' 1870, p. 108.)

Lady Mordaunt was confined on the 28th Feb. 1869, and on the 9th March she informed her husband that the child was not his. He treated this state-

ment at first as a delusion, but from some circumstances which afterwards came to his knowledge, he believed it to be true. The nurse who remained with her a month stated in her evidence that she had not observed the least appearance of insanity about her. Mr. Orford, who attended her in her confinement, and until the 18th March following, deposed that there were no symptoms of puerperal mania or of fever, and there were no delusions. He considered her to be shamming on Monday, the 8th March, after her confinement, and more or less from that time until the 13th May. The only symptoms exhibited were silence and a fixed look. This witness saw her at Worthing on the 10th July. There was nothing then to lead him to believe that she was not in her senses. There was no sign of madness about her at any time. He had seen her recently. Her present state is that of a mind altogether gone. She cannot apprehend anything that is said to her. ('Rep.' p. 86.)

Dr. Jones, another medical man, saw her on the 10th, 11th and 12th, and up to the 26th of March, and there were no symptoms of puerperal mania or any sign that she was suffering from insanity. He saw her twice in April (on the 26th). Her mind was sane, and she answered questions rationally and reflectively. He saw her on the 12th May, and he believed her then to be generally sane. He again saw her on the 10th July. He could with difficulty get any answers to his questions, but when he did, they were rational. He saw her a few days ago. He could get no answer to a question. She threw herself on the hearthrug. He then thought that her mind was impaired.

Dr. Tyler Smith, who was called as an expert, said there was no evidence of puerperal mania following the confinement, and there was an absence of insanity at the time spoken of by the two preceding witnesses. He saw Lady Mordaunt twice in December 1869, and he saw no symptom in her which might not easily have been feigned; but he would not go further than that. Assuming that she was not feigning, the appearances might be those of dementia.

[The evidence for the petitioner thus tended to show that from the date of the confinement until December 1869 there was nothing to prove that Lady Mordaunt was insane or incapable of exercising her mind.]

On the other side, evidence was adduced to show that Lady Mordaunt was incompetent. Three women who had acted as attendants from the 17th May to the 31st August and subsequent dates deposed to certain filthy habits inconsistent with sanity. She destroyed her clothes, and there was a want of personal cleanliness.

Dr. Priestley saw her on the 6th May, with Sir J. Alderson and Dr. Tuke. She was taciturn. She made no reply to questions. On the 16th, 17th and 18th May, Dr. Priestley again saw her twice with Dr. Gull. They agreed she was of unsound mind, and quite incapable of managing her own affairs. Her memory was almost annihilated. She could be made to understand only the simplest things. Dr. Priestley certified that she was 'suffering from puerperal insanity accompanied by delusions,' one of them being that she was still mistress of her own house, when her husband, Sir Charles, had permanently left her. ('Rep.' p. 14.) Dr. Tuke saw her with the former witness on the 6th May. He thought her suffering from puerperal insanity tending to dementia. Neither of these witnesses had seen her since that date. Sir James Alderson saw her on the 6th May. His conclusion was that she was then of unsound mind. He again saw her at Worthing with Dr. Gull on the 3rd July. She had a vacant look, a fixed attitude, and scarcely gave a rational answer to any question. Sir J. Simpson saw her on the 14th April (1869) and in February 1870. He found her fearfully insane, a mere wreck and ruin of the mind, but in good bodily health. In his opinion she was utterly insane, and the insanity had commenced before her confinement. In his view it was a case of puerperal insanity, in which state self-accusations of impropriety were common. Sir W.

Gull saw her first in May 1869, and several times subsequently. She had no 'mental comprehension, and rarely uttered two consecutive sentences.' Saw her last in January 1870. 'She was incapable of mind.' The symptoms he saw might have arisen from any form of insanity. Some cheques were shown to this witness which, with the exception of the two most recent, were, he said, reasonably drawn and carefully filled up. He considered the question of simulation, but could not arrive at an affirmative conclusion. The strongest evidence against simulation was, in his opinion, the uniformity of her condition and her incapacity to take in ideas. Dr. George Burrows saw her with Dr. Reynolds on the 10th July at Worthing at the request of Sir C. Mordaunt's solicitor, and in company with her medical attendants, Messrs. Orford and Jones. He concluded she was then unable to give instructions to a legal adviser. She would only answer repeated questions. He thought her mind had been progressively deteriorating, and that she was then in a state of dementia. Dr. R. Reynolds put questions, but had to repeat them several times before obtaining answers. He could not arrive at any conclusion. He had seen her since several times under an order of the Court. He thought there was either extreme disease or extreme shamming, and after all he had seen he thought the former. He tried to detect simulation, but never saw any breach in her demeanour. In answer to the Court he said, 'It is an unusual case, and there are some points of contradiction in it, such as the amount of intelligence shown up to a certain point coupled with the uncleanliness which is generally confined to extreme cases of dementia. She can play an air and sometimes answer sensibly on common things, and can write letters. It was this inconsistency which for some time made him doubtful.' ('Rep.' p. 18.)

Dr. Wood, who was appointed by the Court, saw her on the 18th Sept., and considered that she was then 'suffering from an arrest of mental power, not strictly imbecility or dementia. 'It is impossible that any human being should have carried out such a system of deception such as that suggested by the petitioner. Lady Mordaunt's conduct was invariably consistent, whereas the most practised artist would have been betrayed into tripping. Simulation would have been betrayed by inconsistencies. Puerperal insanity may occur during pregnancy, at confinement, or during lactation. In the majority of cases it is more or less progressive. It is possible that Lady Mordaunt, though suffering from mania, was sane at the time of and after her confinement.'

The verdict of the jury was to the effect that on the 30th April the respondent was totally unfit to instruct her attorney, and had been unfit ever since.

In reference to this remarkable case it will be perceived that the medical witnesses on both sides agreed that at the time of the trial and for some time previously Lady Mordaunt was of unsound mind, but her mental condition from the date of her confinement to the 30th April was left untouched by the verdict, and can now be only a matter of inference from the medical evidence. The witnesses, acting as attendants, who gave evidence of her filthy habits and her unreasonable conduct, came after this date, and therefore could throw no light upon her mental condition. Until after this date, no reasonable motive could be suggested for her feigning insanity. There was then a strong motive for preventing a public exposure by trial. It was in the three weeks following this date, during which she had to answer the citation served upon her, that she was seen and examined by the greater number of scientific experts.

The medical opinions given by them regarding her condition in the months of March, April, and May are conflicting. At this time Mr. Orford, her usual medical attendant, observed nothing the matter with her mind, and believed that she was shamming. Mr. Jones, another medical attendant, agreed in this view, and said that her state was inconsistent with any kind of mania he ever saw. Dr. Tyler Smith, as an expert, confirmed these gentlemen in their opinion that

the symptoms were not those of puerperal insanity. Dr. Priestley, who first saw her nine weeks after her confinement, thought she was then suffering from puerperal insanity with catalepsy: Dr. Tuke,—from puerperal insanity tending to dementia and from catalepsy. Sir J. Simpson saw her six weeks after her confinement, and considered her to be 'utterly insane.' Sir W. Gull thought that her symptoms might arise from any form of insanity. Dr. Burrows (in July) thought she was in a state of dementia. Dr. R. Reynolds said it was a case of extreme disease or extreme shamming. He could not detect simulation. Mr. Harris, a surgeon of Worthing, saw her in May (May 22), and attributed her condition to puerperal mania. Mr. Hughes (Aug. 25) thought her case was one of puerperal mania. She had no mind or memory, and was unable to converse. Dr. Wood (September) said that she was suffering from an arrest of mental power, not strictly imbecility or dementia.

The learned judge, in his address to the jury, put aside all these conflicting medical opinions. 'He did not know a more difficult definition to express in words than that of insanity.' . . . There was, he thought, as much variety in mental as in physical disorder. Instead of asking them to say whether the lady was mad or insane, he would wish them to consider whether she was or was not in such a state of 'mental disorder,' as to prevent her giving instructions. They found in the affirmative.

The subject of the simulation of insanity has been well treated by Dr. Laurent ('Ann d'Hyg.' 1866, 2, 460). He places great stress on a close attention to the physiognomy of the insane, which cannot be simulated, and in the absence of sleep, generally so characteristic of insanity, and not observed in the impostor. He advises the complete isolation of the person, with daily watching, for a certain time, as a method which seldom fails to detect the imposition, while it cannot injure the really insane. One remarkable circumstance he points out, namely, the influence of feigning insanity on the feigner. He is of opinion that persons who have for some days or weeks pretended that they were insane have become in the end really insane. In support of this view he quotes the cases of two sailors who had feigned madness in order to escape imprisonment in the hulks. The imposture was at first crowned with success, but in the end it had an unfortunate result, for they became really mad. (Op. cit. p. 462.)

The impostor must be ever on the watch that he does not fail on any one point. This creates a great strain on the mind, and with the anxiety attendant on the maintenance of such an imposition at all times and under all circumstances he may suffer from cerebral exhaustion with its worst consequences.

Statistics of insanity.—The tables of Esquirol show that the *age* at which insanity most commonly attacks persons is thirty; it rarely makes its appearance below the age of twenty, or above the age of fifty-five.

According to a report published by the Commissioners of Lunacy for 1850, there were in that year under their supervision, in England and Wales, 15,079 lunatics—namely, 7,074 males and 8,005 females. Of these, 11,305 belonged to the pauper class; and of the whole of the number, 7,140 were confined in asylums. By their report, dated March 1856, it appears that on January 1, 1856, the total number of lunatics amounted to 20,764—namely, 9,701 males and 11,063 females. Of these, 20,643 are thus accounted for—there were in asylums, 13,823; in hospitals, 1,628; in metropolitan licensed houses, 2,591; and in provincial licensed houses, 2,601. On January 1, 1861, there were 24,845 insane persons confined in asylums, hospitals, and licensed houses in England and Wales; on January 1, 1862, the number was 26,200; and on Jan. 1, 1864, the numbers had risen to 28,285 in asylums, private and public; and 16,410 in workhouses or lodged as boarders, making in all 44,695 persons

of unsound mind. This is exclusive of the insane in gaols—of Chancery patients living out of asylums, and cases kept out of view for private reasons. ('Med. Gaz.' vol. 46, p. 269. See also 'Journal of Psychological Medicine,' 1850, p. 111.)

From the Report of the Commissioners for 1872 it appears that the total number of insane persons under care on the 1st January of that year was 58,640, being an increase of 1,885 on the year 1871. On the 1st January 1862 the total number of insane persons registered amounted to 44,695, making an increase in ten years (1862–72) of 13,945. The proportion to 1,000 of the population was in 1862 2·02, in 1872 2·54. For further statistical information the reader is referred to a valuable paper on the Criminal Lunatics of England, by M. Brierre de Boismont ('Ann. d'Hyg.' 1869, 1, 382), and the 'Statistique Générale des Aliénés de 1854 et 1866,' by M. Legoyt ('Ann. d'Hyg.' 1867, 1, 191 and 453).

CHAPTER 93.

MEDICO-LEGAL QUESTIONS IN RELATION TO THE INSANE—IMPOSITION OF RESTRAINT—ILLEGAL IMPOSITION OF RESTRAINT—VIOLENCE OF TEMPER—CERTIFICATES OF INSANITY—RULES FOR THE DISCHARGE OF LUNATICS.

Among the questions which may come before a medical jurist in relation to the subject of insanity are the following:—A practitioner may be required to say whether a person affected with the malady should or should not be confined in a lunatic asylum,—whether he should be deprived of his civil rights by interdiction, or whether he be so completely cured of his malady as to justify his liberation from confinement. Then again medical evidence may go far to determine whether a will or deed executed by an alleged lunatic should be set aside; whether a marriage-contract or debt should be annulled; and lastly, whether a criminal act was committed by a person while labouring under insanity—a question involving either the life or, according to circumstances, the perpetual imprisonment of a person accused of crime.

Imposition of restraint.—By restraint in a legal sense we are to understand the placing of attendants to watch or control the actions of an alleged lunatic, or his forcible removal from friends or relatives with or without the confinement of his person by physical force. What are the circumstances which will justify a practitioner in applying restraint to the insane? The law has given great power in this respect to members of the medical profession, but, owing to certain abuses, the power has been of late years much restricted by various Acts of the Legislature. Most medico-legal writers agree that we are not justified in ordering restraint except when, *from symptoms* witnessed by ourselves, we have reason to apprehend that *the lunatic will injure himself or others in person or property.* It is not then sufficient to seek merely for evidence of the existence of some *delusion*, but to determine how far that delusion, if present, affects conduct. Unless the delusion be such as to render it probable that the patient's own interests or those of others may be damaged by his insane conduct, careful superintendence will answer all the purposes of the closest restraint. (For some remarks on this subject, see 'Med. Gaz.' vol. 44, p. 1061.) The act of resorting to severe restraint on all occasions has been justified on the principle that it may tend to the cure of a patient by removing his delusion. In this point of view the subject has reference to medical practice and not to legal medicine. It may be urged with more plausibility, that by withholding restraint in incipient cases, mischief may be done by the lunatic to himself or others, and that then it will be too late to

interfere; but even here proper superintendence will render close confinement unnecessary.

The legal rule for the interference with the liberty of a person which restraint always implies has been thus stated by Mr. J. F. Stephen:—'There is a normal state in which all human creatures act on the same principles, and the general meaning of sanity is, that the person conducts himself in this normal manner; that he is acquainted with the circumstances by which he is surrounded; that he has objects in view in his actions, and that he regulates his conduct with reference to them and to the general considerations which affect matters of that class.' ('General View of the Criminal Law of England,' pp. 87 *et seq.*)

It cannot be too strongly impressed on the mind of a medical man that, before he employs the powers conferred upon him by law to confine a person who is said to be mad, he should have well in his mind what lawyers imply by the term 'madness' in a practical sense. As defined by Mr. Stephen, it means *conduct* of a certain character—not, as is usually interpreted by medical men, a certain *disease* of the brain the existence of which is speculative, but one of the effects of which, if present, is to produce such conduct. In examining an alleged lunatic, with a view of determining whether he should or should not be placed in confinement, his conduct must therefore be compared with that of other men in a normal state; and here, in order to constitute sane behaviour, we must look for a generic and not for a specific resemblance. Any degree of ignorance, vice, or folly is perfectly consistent with sane conduct in a legal sense. The power of restraint is not intended to be applied to such cases as these; they are properly under certain circumstances amenable to the criminal law. An ignorant, vicious, or foolish man may do a great amount of mischief, but he has a liberty of choice and freedom of action; and if from folly or depravity he selects a bad course, he is not therefore insane, but is as much responsible for his actions as a sane man who prefers a good course. Such a man should not be treated as a lunatic or confined in an asylum under a medical certificate. It may be sometimes difficult to define the line which separates acts of depravity from those of insanity; but medical men have not been in many cases sufficiently cautious in endeavouring to make a distinction. Lawyers look closely to conduct as a ground of interference with personal liberty: the conduct must be such as to be inconsistent with the usual behaviour of a normally sane person placed under similar circumstances.

In examining a person proposed to be placed under restraint, we must take care not to confound acts depending on violence of temper with those which proceed from unsoundness of mind. A man may have always had a violent temper, subject to occasional fits of aggravation; but this condition must not be mistaken for mental disease. In order to determine whether the acts of a person be due to violent temper or insanity, it will be proper to ascertain what may have been his natural habits. The great feature of insanity is *change of character*—a man who is really insane is different from what he has previously been; but it may be proved of a violent-tempered man that he has always been the same. The greatest abuses of the restraint-system have been chiefly observed in respect to monomania, where persons have been forcibly imprisoned and confined in their persons, because they entertained some absurd delusions, over which, however, they had so great a power of control as to render it somewhat difficult even for a shrewd and experienced examiner to detect them. When at last, after many hours' cross-examination, the existence of a delusion has been made apparent, the result has been looked upon as furnishing matter for triumph and exultation; but, as Dr. Conolly justly remarks, one point in these cases appears to have been wholly lost sight of, namely, *What possible* injury could have resulted to the patient or his friends from

the existence of a delusion over which he had such complete control and mastery as to render it a most laborious task to obtain any evidence whatever of its existence? ('Indications of Insanity.') It may be freely admitted that where delusion does exist, there is reason to suppose that the mind must be more or less disordered in all its faculties; but such patients, unless they manifest violence, require only close watching, not a rigorous imprisonment in an asylum. The greatest danger is to be apprehended in all those cases where there is the least power of self-control.

The forcible removal of a person from his home to a lunatic asylum, unless the circumstances are of such a nature as to render immediate interference necessary on the ground of admitted or proved insanity, is unjustifiable in law, and may involve those concerned in the removal, in a serious responsibility. The case of *Nottidge* v. *Ripley* (1849) is in this respect of some interest. A young lady of fortune was clandestinely and violently removed from a place to which she had voluntarily retired; she was examined by two medical witnesses nominated by those who had thus forcibly removed her, and then closely confined in a lunatic asylum for seventeen months. She was not allowed to communicate in any way with those members of her family who alleged that she was not insane, and who through these tortuous proceedings were for some time unable to discover the retreat of their relative, so as to have the case publicly investigated. At the trial for this abduction, the jury returned a verdict against the persons who were charged with the offence. ('Med. Gaz.' vol. 44, p. 974.) The allegation of insanity was denied, although it was proved that the plaintiff had fallen into the hands of men whose object was obviously to possess themselves of her property, and that, like her sisters, she had adopted some absurd pseudo-religious notions. If, however, such violent measures are sanctioned before any preliminary inquiry, medical or otherwise, is instituted into the state of a person's mind, and upon the mere opinion of non-medical persons or interested relatives, no person, whether sane or insane, could feel sure of his liberty. This case called forth at the time some criticisms which the reader will do well to peruse. (See 'Jour. Psychol. Med.' 1849, p. 564; and 1850, p. 14.)

In *Hill* v. *Philp* (Exchequer, Feb. 1852), an action was brought by plaintiff to recover damages for alleged neglect and unskilful treatment on the part of the defendant while under his care as a lunatic patient. The plaintiff was examined, and he wished to impress the Court that he was then perfectly sane. His cross-examination, however, elicited the belief that 'he was descended from Leofric, the wise Earl of Mercia, who was contemporary with Edward the Confessor.' It was also proved that while in a tavern he had called for water from Jerusalem and the River Jordan! In short, there was abundant evidence of his insanity, and the jury properly returned a verdict for the defendant. The case, however, conveys an important caution that medical men should be careful in the imposition of restraint, as from the evidence it appeared that unnecessary violence had been used on this occasion. There is another circumstance which renders this case of interest to medical practitioners: it involved the question whether in the treatment of a lunatic, a medical man can justify the imposition of restraint by the allegation that he acted under the directions or upon the request of the wife or other relative at whose instigation the lunatic may have been confined. In *Hill* v. *Philp* the judges decided that a medical man under such circumstances may act upon the directions of a wife, but that the directions must be considered as only guiding his judgment, and not as absolutely dictating to him and justifying his proceedings; that he is still bound to exercise his own professional knowledge and discretion so far as to refrain from doing anything or adopting any course which might be injurious to the patient. A medical man is, there-

fore, ultimately responsible for his treatment of a lunatic: no person can give him authority to do that which is not in accordance with general practice or the necessity of the case. (For a report of this case, and some judicious remarks upon the decision, see the 'Legal Examiner,' May 29, pp. 307, 318.)

In *Scott* v. *Wakem* (Guildford Summer Assizes, 1862), the defendant, a medical practitioner, was sued for damages in placing under restraint, and without necessity or authority, a man labouring under *delirium tremens*. The plaintiff had been subject to attacks of this disease, and on the day in question the defendant was called in to see him. He found him in an excited state with loaded pistols in his hands, threatening to shoot his wife,—and two men were holding him. He was then in a fit of *delirium tremens*, and in a dangerous state. The defendant placed a man in the house to watch him during the night. The usual medical attendant of the family saw the plaintiff on the following day, and then he found him quite sane and sensible, and complaining that he had been kept a prisoner in his own house by order of the defendant. Up to that time he had not seen the plaintiff for several months, and was therefore unable to speak to his condition on the previous night when he was placed under restraint. It was denied that any authority for interference had been given to defendant by the wife, although the evidence that she had authorized the proceedings was very strong. The plaintiff, who recovered next day, brought an action for damages. The charge of the learned judge (Bramwell, B.) in reference to the responsibility of the defendant was to this effect:—As to the law, if the defendant had made out that the plaintiff was, at the time of the original restraint, a *dangerous lunatic*, in such a state that it was likely *he might do mischief to any one*, he would be justified in putting a restraint upon him, not merely at the moment of the original danger, but until there was reasonable ground to believe that the danger was over; and this would sustain one of the pleas. Or, again, if the jury were satisfied that the wife of the plaintiff had called in the defendant to cure her husband under a fit of *delirium tremens*, and that he came in to cure him, and left him when he believed he had recovered, then the defendant would be justified in what he had done, supposing that in either case he had done nothing that was not necessary or reasonably proper under the circumstances. Again, if the defendant had been called in on behalf of and for the benefit of the plaintiff, and to cure him under a fit of *delirium tremens*, and when the plaintiff recovered, he himself approved what had been done, that would likewise afford a defence, supposing that nothing more than proper treatment had been adopted. A verdict with a farthing damages was returned, but the medical man was necessarily put to great expense in defending the action. He had acted *bonâ fide*, as medical men ought to do on these occasions, under the belief that there was some imminent danger; but the learned judge observed, if he had done wrong in imposing restraint, he would not be justified on account of the sincerity of his belief. Had he declined to interfere, and the husband had shot the wife with one of the loaded pistols, he would have been severely censured for not having acted as he did. On one point this case suggests a caution to practitioners. The wife denied that she had given any authority for interference, and thus her evidence conflicted with that of the surgeon. Fortunately the facts were adverse to her statement; but in future cases of this kind, it would be desirable for the medical man to have a written authority for such proceedings, bearing in mind that he does not exceed what is necessary, proper, or usual for the treatment of the person; and on this he must always exercise his own judgment, irrespective of the opinions or suggestions of others.

Medical men, acting most conscientiously in discharge of their duties, cannot hope to escape harassing and vexatious actions when they are called upon to deal with cases of *delirium tremens*. The peculiarity of this disorder is that

with the cause, it may soon disappear, and thus medical evidence may be easily procured to show that a person, at a short period before or after the imposition of restraint, was in a sane state of mind and not in a condition to justify any restraint of personal liberty. The case of *Symm* v. *Fraser* and *Andrews* (Queen's Bench, Dec. 1863) pre-eminently shows that no care or precaution in the performance of these responsible duties will always suffice to prevent a medical man from suffering a large pecuniary loss in order to vindicate his professional character and conduct in reference to the insane. The plaintiff was a woman who gave way to habits of drinking; she had had an attack of *delirium tremens* two years previously to the trial. The defendants were called in, and attended her professionally. At her own request a nurse and a male attendant were provided for her by a friend, and they stated that they merely followed out the directions of the defendants regarding the plaintiff. She recovered, and after the interval of a year brought an action against the two physicians, not for negligence or ignorance, or want of due care and skill in treatment, but for assaulting and ill-using her, and putting her under personal restraint. It was affirmed that they were wrong-doers *ab initio*, and that there was no reasonable grounds to justify their proceedings. The trial occupied five days, and ended in a verdict for the defendants. The evidence is instructive as showing upon how slender a foundation an action of this kind may rest. There was no doubt that the plaintiff in this case had laboured under *delirium tremens*: every medical man who saw her described the symptoms to be those of this terrible disease—the restlessness, irritation, and excitement; the loss of sleep, the heat of the throat, the sense of suffocation, the aversion to lie down, the look of terror and the wild suffused eyes; the tremor in the limbs and even in the tongue, the distrust and dislike of all around, the disposition to talk incessantly, the thick voice and 'rambling way of speaking;' the attempts to run out of the house and even to get out of the window, the constant craving for drink, the violence towards those who withheld it; and, lastly, the tendency to delirious delusions.

If in any case temporary restraint was required, it would have been in this, and the verdict of the jury showed that the defendants were legally justified in resorting to it. One question raised was, whether they were responsible for the acts of the two hired attendants. It was proved that their presence had not been originally authorized by them, but it was suggested that there had been subsequent authorization of their proceedings. The learned judge (Cockburn, C. J.) here drew a distinction between the assumption of authority and the giving of instruction or advice as to what should be done: he also intimated that although nurses and attendants might not be originally appointed by medical men, yet if authority and command were assumed over them in reference to the management of patients, the medical men would be responsible for the personal restraint under which the patients were thereby placed. There had been, no doubt, some restraint on personal liberty in this case, but, Was it or was it not necessary? The jury by their verdict justified the conduct of the physicians, and found that no more restraint had been applied by them than was actually necessary and reasonably required for the proper treatment of the plaintiff.

The case of *Hall* v. *Semple* (Queen's Bench, Westminster, Dec. 1862) presents on the other hand an illustration of the heavy responsibility incurred when proper precautions have not been taken before placing a person under restraint. This was an action against a medical practitioner for illegally causing the plaintiff to be seized and confined in a lunatic asylum. The question, however, mainly turned upon whether due care had or had not been taken in signing the medical certificate by which plaintiff was forcibly carried off to a lunatic asylum. (See page 520, *post*.) The evidence given by himself, his daughter, and neighbours established his sanity. The medical man at the asylum could

find no indications of insanity about him on his admission, and the two Commissioners of Lunacy who examined him a few days after his admission ordered his immediate discharge. It was proved that he had led a very unhappy life with his wife—that he was subject to fits of violent passion, and was of a somewhat jealous disposition. After a lengthened trial the jury returned a verdict for the plaintiff with 150*l.* damages. The evidence for the defence failed to prove that the plaintiff was labouring under any insane delusions in a legal or medical sense. The facts of this case show that any passionate ill-tempered man who lived on bad terms with his wife might, by the certificates of the wife and two medical men, be illegally seized and confined as a lunatic. The evidence for the plaintiff, as given by his daughter, proved that there was great provocation on both sides, but no insanity. The regular medical attendant of plaintiff deposed that he had known him all his life, that he was quite sane, that he himself had been repeatedly asked by the wife to certify that her husband was insane, but he had never seen anything in the plaintiff's conduct to justify him in giving a certificate of insanity. This turned out to be one of those unfortunate cases in which too great reliance was placed upon the statements of a woman, who had an interest in and strong motives for the removal of her husband from the house. Had a reference been made in the first instance to his usual medical attendant, these proceedings would not have taken place.

In order to provide for the protection of lunatics and the prevention of undue violence or frequency in the application of restraint, the law compels the keepers of asylums to enter in a book a report of each case or of each occasion on which any mechanical restraint is resorted to. An omission to make this entry is a misdemeanour: and at the Maidstone Lent Assizes, 1851, two medical men were convicted and fined for placing patients under restraint without having made the proper entries required by law. (*Reg.* v. *Maddock*: see also 'Med. Gaz.' vol. 47, p. 556; and a paper on the 'Use and Abuse of Restraint,' in the 'Journ. Psychol. Med.' 1849, p. 240.)

CERTIFICATES OF INSANITY.

It will here be necessary to state the circumstances which require the attention of a practitioner when he is called upon to sign a certificate of insanity, whereby a person may be placed in confinement in an asylum. The Acts which specially refer to this subject are the 16th and 17th Victoria, c. 96 and 97. These Acts, which came into operation on the 1st of November 1853, are a consolidation of the statutes on the regulation of the care and treatment of lunatics. Their provisions are very stringent, both with respect to medical men who sign certificates, and those who keep asylums for the reception of lunatics.

According to s. 74. c. 97. no person (not a pauper) can be received into or detained in any asylum, without an order from some person (generally the nearest relative) and two medical certificates, which must be signed *by two physicians, surgeons, or apothecaries* not in partnership or an assistant to the other, and each of whom shall *separately from the other* have personally examined the person to whom it relates not *more than seven clear days previously* to the reception of such person into such asylum. These certificates need not be filled up, signed, and dated on the day of examination; but the examination of the patient must be made in every case *within seven clear days* before admission.

In *Hall* v. *Semple* (*suprà*) it was proved that plaintiff was admitted into an asylum on the 31st July, by a medical certificate dated on the 29th of that month, but the visit to the patient had been made on the 13th June. It was

therefore invalid, and the person to whom it referred was ordered by the Commissioners to be immediately discharged: he had been improperly confined on an illegal certificate. It is a strange fact that, when rules are explicitly given in the Act of Parliament, medical men should be so negligent of a plain and simple duty as to sign certificates in direct contravention of the law. The examination of the patient in this case had been made more than six weeks before, instead of within one week of the date of the certificate. In June 1848 a surgeon was tried and convicted at the Central Criminal Court, of having certified that he had examined a female lunatic on the *day* on which he put his name to the document, when he had not seen her for two or three months. There was no doubt of the insanity of the party, but as this was an untrue statement, he was convicted of a misdemeanour.

The following is the form of a medical certificate in the case of private patients:—

I, the undersigned, being a (duly registered) physician *or* surgeon *or* apothecary [*here set forth the qualification*], and being in actual practice as such, hereby certify that I, on the day of , at [*here insert the street and number of the house* (*if any*), *or other like particulars*], in the county of &c., separately from any other medical practitioner, personally examined A. B., the person named in the accompanying statement or order, and that the said A. B. is a lunatic [*or* an idiot, *or* a person of unsound mind], and a proper person to be taken charge of and detained under care and treatment, and that I have formed this opinion upon the following grounds, viz.:—

1. Facts indicating insanity observed by myself [*here state the facts*].
2. Other facts (if any) indicating insanity, communicated to me by others [*here state the information, and from whom*].

(Signed) Name.
Place of abode.

Dated this day of , One thousand eight hundred and

Under s. 10. c. 96. no person can be received into any registered hospital or licensed house, or as a single patient, under any certificate which purports to be founded only upon facts communicated by others. A medical certificate may be amended if incorrect or defective. No medical man can receive as a boarder in his house any insane person, whether for medical treatment or otherwise, unless he has previously obtained a licence from the Commissioners of Lunacy, and one certificate duly signed by two other medical men. In January 1861 a medical practitioner was convicted of misdemeanour for thus receiving illegally a lunatic patient. (*Reg.* v. *Kelly*, C.C.C. Jan. 29, 1861.) This was a clear breach of the regulations. The defence was that he was ignorant of the law, but this was no answer to the charge. ('Med. Times and Gaz.' Jan. 28, 1861, p. 105; and 'Lancet,' Feb. 9, 1861, p. 151.)

Dr. Millar, who has had considerable experience as the superintendent of a large lunatic asylum, states that, as a rule, very few of the medical certificates which are brought with private patients are correctly filled up, notwithstanding the plainness of the instructions. The omission of particulars apparently of no importance has often caused them to be rejected as illegal; and it will therefore be useful to point out the chief errors which, according to this gentleman, are committed by medical men. 1st. A neglect in stating the qualification which empowers the medical practitioner to practise. It is not unusual for the blank space to be filled up with the words 'physician,' 'surgeon,' or 'apothecary,' instead of inserting the *qualification* which enables him to practise in any of these capacities. 2ndly. Omitting the address of the house at which the examination was made. In the case of *Greenwood* (p. 522) it was decided that this omission rendered the certificate invalid. If there should be

no number to the house, it will be sufficient to state, 'At the dwelling-house of ——, in —— street, village, &c.' 3rdly. Omitting the address and occupation of the person examined. In nine cases out of ten, according to Dr. Millar, an omission of one of these three simple and obvious particulars occurs —a degree of carelessness not creditable to the profession. Medical men no doubt err from regarding them as having no bearing whatever on the sanity or insanity of a patient. (See Millar's 'Hints on Insanity,' p. 78.)

By s. 13. c. 96. a medical practitioner who gives a false certificate, or any person not being a registered physician, surgeon, or apothecary in actual practice, who gives certificates as such, is declared to be guilty of a misdemeanour. For any act done by a registered medical practitioner contrary to any of the provisions of the Act (although not declared to be a misdemeanour), he is subjected for each proved offence to a penalty of twenty pounds. By s. 36 the words 'physician,' 'surgeon,' or 'apothecary' shall respectively mean one duly 'licensed or registered to practise as such by, or as a member of, some College, University, Company, or Institution legally constituted and qualified to grant such authority or licence in some part of the *United Kingdom*, or having been in practice as an apothecary in *England or Wales* on or before the 1st day of August, 1815, and being in *actual* practice as such physician, surgeon, or apothecary.' (16 and 17 Vict. cap. 96. s. 36.) Thus the certificates of Irish medical practitioners are valid for the confinement of lunatics in England, and conversely those of English practitioners are valid for asylums in Ireland. A special Act has been passed for Scotland (20 and 21 Vict. c. 71): and by sections 34 and 35 the rules regarding the certificates are similar to those of the English statute.

Under the above-mentioned statute there is a technicality which it is desirable to point out, as it may affect the validity of a medical certificate. The Act expressly requires that the number of the house and the name of the street where the examination is made should be specified in the certificate, as well as the residence, profession, or occupation (if any) of the person examined. In *Re Greenwood* (*suprà*), which came before Mr. Justice Coleridge on a *habeas* for the discharge of an alleged lunatic (February 1855), the medical certificate for the confinement of this gentleman was set aside owing to an informality. There appears to have been considerable doubt about the state of his mind. Two physicians made affidavits that he laboured under unsoundness, while two others gave their opinion that he was mentally sound. The late Serjeant Wilkins then took an objection that, under the Act, the number of the house and the name of the street where the examination took place should be mentioned in the medical certificate; that had not been done in this instance, and Mr. Greenwood was not therefore in legal custody. Coleridge, J., in giving judgment, said:—'It was stated in the certificates that the examination had been made at Blackburn, but the examiners omitted to state the street; and the affidavit showed that Blackburn was a large and populous place. The statute prohibited the reception of any lunatic without medical certificates according to a form in the schedule to the Act, which directed the insertion of the name of the street and the number of the house in which the examination took place. It was not agreeable to decide on a formal objection when the defect had no influence on the merits, and that might be said in the present case; but decisions were precedents, and here the words were express: if one thing might be omitted so might others, and all the forms were with a view to the protection of a lunatic. If it were asked, of what benefit was such a particularity?—it might be answered that the Court had no business to consider that question, but the form might be a matter of importance in order to prevent improper examinations. He had come to the conclusion that the certificate was defective. If the party had been shown to be in a dangerous condition

it would have been the duty of the Court to interfere. Upon the facts, Mr. Greenwood might be of most impaired memory, or might not be able prudently to govern a household; but it was clear he was harmless to himself and others—he would therefore be discharged.'

A medical practitioner must not be too ready to lend himself to the signing of certificates for the imprisonment of persons who may be labouring under harmless delusions. In violent mania, or in monomania with a homicidal or a suicidal propensity, there can be no doubt of the propriety of applying some degree of restraint, for here the necessity is imminent. If a remarkable change has suddenly taken place in the character of a patient,—if he has become irritable, outrageous, or threatened personal violence to any one,—or if he has recklessly endangered the interests of himself and family, he is undoubtedly a fit subject for restraint. (See 'Pagan,' op. cit. p. 75.) The more he approaches to this condition, the less difficulty we shall have in coming to a decision, and in a really doubtful instance there will be no impropriety in employing restraint; since, although the person is thereby deprived of liberty, it is better that this should happen than that he or his friends should incur the risk of suffering severely by his insane conduct.

The 74th section of cap. 97 provides that in cases of emergency a person (not a pauper) may, under special circumstances (these being stated in the order), be received into a house or hospital upon a certificate signed by *one* medical practitioner only, provided that within *three days*, two other such certificates are signed by two other medical practitioners not being connected with such house or hospital, upon a like examination. The detaining of a person upon one medical certificate only, beyond a period of three days, without such further certificates, is a misdemeanour in the keeper of the house or hospital. By s. 67. c. 97. the certificate of *one* medical practitioner only, signed according to the above rules, will suffice for a *pauper lunatic*, provided the person has been previously examined by a justice, clergyman, and overseer or relieving officer. By s. 12. c. 96. no medical practitioner who is interested in or attends a licensed house or hospital, or whose father, brother, son, partner, or assistant is wholly or partly the proprietor of, or a regular professional attendant in, such house or hospital, shall sign any certificate for the reception of a patient into it. It is obvious from the terms of the Act that one person cannot sign a certificate as a substitute for another, and yet there have been several instances of its violation under these circumstances. In December 1855 a medical assistant was committed for trial because he had signed the name of the surgeon with whom he was living, to a certificate of insanity for the confinement of a pauper lunatic. There was no doubt about the insanity of the person, and the plea urged in defence was that the surgeon whose name was thus forged was in ill-health, and had given the assistant an authority to sign papers for him. This, however, was no justification of a violation of the terms of the Act: the words of the certificate are so explicit on this point that no reasonable person can have any doubt about their meaning. In *Reg.* v. *Ogilvy*, C.C.C., September 1872 ('Lancet,' 1872, 2, 354, 467, 499) defendant was fined fifty pounds for a breach of the Lunacy Act, *i.e.* for unlawfully signing a medical certificate whereby a person was admitted into a lunatic asylum. The defendant first signed 'Alexander Ogilvie, Surgeon, R.N.' As his name was not in the register, this was sent back for amendment: he then put 'M.D., St. Andrew's, 1828.' It was found that he was not registered—that he was not a surgeon in the Royal Navy, and had had no connexion with St. Andrew's. In another case, which occurred in December 1872, proceedings were taken against a medical man under the following circumstances. He signed a certificate for the confinement of a woman really a lunatic, stating that he had seen and personally examined her on the 9th August, 1872, although

he had not seen her since March 1869. Further, it was proved that the certificate was really signed on the 10th September, but dated the 9th of August. The medical man pleaded guilty, and was fined ten pounds by the bench of magistrates. These glaring examples of a departure from the explicit terms of the Act relating to lunatics should convey a caution to medical men that they cannot with impunity infringe the strict letter of the law.

As ignorance of the law is not allowed to be an excuse for its violation, so a medical man, unless acquainted with all the particulars above mentioned, may easily subject himself to a prosecution or a civil action; and he is not likely to be spared the disgrace and mortification attendant upon either, should it happen that the case is of a doubtful nature. The law expressly requires from each medical man a separate visit, a separate personal examination of the alleged lunatic, and a separate medical certificate setting forth the *special fact or facts* (whether observed by himself or derived from the information of others) upon which his opinion is based. Dr. Conolly has shown that there are objections to the severity of the restrictions regarding these certificates ('Journal of Medical Science,' April 1861, p. 127), but according to the evidence in some recent cases, they are not strong enough to prevent sane persons from being wrongfully sent as lunatics to asylums.

Specification of facts.—It will be observed that every medical practitioner signing a certificate of insanity is required to specify the *facts upon which his opinion is formed*, and whether such facts are derived *from his own observation* or from the information of any other person. Medical practitioners have had some difficulty in performing this duty, *i.e.* in assigning the fact or facts upon which their judgment of the insanity of a person is based. ('Med. Gaz.' vol. 36, p. 1434; and vol. 37, p. 485.) What will constitute the description of a fact to render a certificate valid? This important question was raised and decided in the case of *Shuttleworth* (Queen's Bench, Nov. 17, 1847.) An application was made for the discharge of a lunatic on the ground that the medical certificates did not set forth the *facts* from which the opinion of those who signed them was derived. In one it was stated that the lunatic laboured under a *variety of delusions*, and that she was *dirty and indecent in the extreme*; in the other the certifier stated that he had formed his opinion from the *conversation* which he had that day had with her. It was contended that the statement in the first certificate was not so much a fact as a conclusion drawn from other facts, which ought to have been mentioned in the certificate itself. Lord Denman, in giving the judgment of the Court, held that the certificates were valid—that it was not necessary to have all the delusions of an insane person stated in the certificate. The statement that the lunatic was dirty and indecent in the extreme was *primâ facie* sufficient to justify the imputation of insanity, even if the certificate did not state that the patient laboured under a variety of delusions: the allegation that the opinion respecting insanity was founded upon a conversation with the alleged lunatic was also sufficient to render the certificate valid. ('Med. Gaz.' vol. 38, p. 932; also 'Law Times,' Nov. 21, 1846, p. 145.) Hence it follows that a general statement of the circumstances which have led to the belief in the insanity of a person, will be a sufficient compliance with the requirements of the statute to render a certificate valid, provided the examination has been made *bonâ fide* and with due care and attention.

Dr. Millar has shown how little the words, 'Facts indicating insanity observed by myself,' are appreciated or even understood by many medical men, who are legally empowered as registered members of the profession to sign these certificates. The facts are frequently stated in a loose and careless manner, showing a complete misapprehension of their meaning. What is really

required by the law is a statement of facts observed or witnessed by the medical man himself, which would carry conviction to the mind of any non-professional man reading it, that the person to whom it referred was of unsound mind. A medical man should in all cases avoid giving as a fact indicating insanity, any delusion which might in reality have some foundation in truth. With respect to the second requirement of the statute,—namely, 'Other facts (if any) indicating insanity communicated by others,'—it may be observed that, although these do not supersede the facts observed by the medical man himself, they are of great importance in throwing light upon the propensities or habits of the patient, and thus serve as a guide for treatment. (Op. cit. p. 79.) A medical man must take care to draw a clear distinction between the facts observed by himself and the facts communicated to him by others, and avoid such vague expressions as that he 'thinks' and 'believes,' &c.

Dr. Millar gives a series of 'facts' taken from certificates of patients who have been brought to the asylum of which he is superintendent. Some, he remarks, afford no evidence whatever that the person to whom they refer is of unsound mind; others are vague and irrelevant; and, lastly, there are some which are quite satisfactory:—

'1. *Those facts which offer no evidence of insanity.*—(In reference to these certificates, it may be remarked that they were all sent back to be amended, as the patients could not be received under them):—

'Refuses to take her medicine, and resists in every way; closes her teeth, and threatens to strike any one near her; obliged to use the strait-waistcoat.'

'Violent in her temper and very abusive.'

'She refuses to answer questions as to where she lives; her memory is much impaired; she is weak, and has an appearance of imbecility.'

'He is very bad-tempered; and imagines he is coming into some property.'

'Look and manner indicate imbecility; memory very defective; can give but little account of himself; does not know his own age.'

'He has a suspicious, dangerous, suicidal eye; he evidences in his appearance cerebral mischief.'

'Great excitability from religious delusions.'

'Moody irritable temperament, and of weak memory in many particulars.'

'General conduct for the last three months; sleeping on the coffin of his wife three months ago; general obstinacy and delusions of various kinds; extreme excitement at times; this day he appears much more rational and quiet.'

'She has an insane appearance, and wanders about apparently without object; she is anasarcous.'

'An insane appearance; loss of memory; she is subject to epilepsy; has been under my care for some time, and has never until yesterday been in any way violent or troublesome.'

'He imagines he has no other clothes to put on besides his present habiliments; he imagines he is about to come into some property.'

'2. *Vague and irrelevant facts.*—Obstinate; has the manner and appearance of an insane person; complained of her head; refused her food, and would not go downstairs; melancholy.'

'She states she had a child which is dead, but which is now living.'

'She is suspicious of her husband without cause; says he keeps bad company; she is most irritable and jealous, and takes stimulating drinks to a dangerous and exciting extent.'

'His countenance is expressive of great anxiety and restlessness; his pulse exceedingly feeble—he appears to have been bled; he says all the public-houses in London belong to him; also that he is going to marry the Queen.'

'She is very good-tempered, but day and night she talks almost incessantly, occasionally sings; she says she comes from Otaheite, and relates stories of those around her doing absurd things.'

'This patient has old bronchitis, and is very weak; her memory is almost lost; she believes her mother is still alive, and gives me messages to people long since dead; at times she is noisy and excitable, and is generally very loquacious.'

'His unreasonable and inconsistent conversation.'

'That, being a married woman recently confined of her first child, she persists that she is not married, and is under delusions that she has committed some great sin; she is melancholy, seldom speaking when spoken to, and almost totally refusing her food; and constantly attempting to beat herself, requiring to be kept under restraint.'

It turned out that this woman was really not married.

'He has imperfect sight, good hearing, and taste; he is unable to speak; his gait is ape-like; and the skull-bones seem to have fallen together, from the want of cerebral development. He will occasionally slap his face and strike his hands, and sometimes make a howling noise.'

'3. *Good facts.*—That she is in a state of restlessness and excitement, and generally incoherent in her conversation and conduct. Thus, stating her place of abode to be twenty-five miles from Hertford, when it is only two miles; that her doctor resides in Fore-street, Cripplegate, and goes to Hertford to see her every day, when, in fact, he resides in Hertford and sees her only now and then; that her uncle farms 3,000 acres of land in one farm, besides several others, when, in fact, he farms only 150 acres; and that all her conversation is without rational sequence of ideas, passing rapidly from one thing to another; that, whilst I was conversing with her, she began to undress herself, apparently without purpose.'

'She states that she is a lost person, and without hope of forgiveness; that she will be taken to prison, and die a miserable death; that the devil whispers in her ear that she has committed the unpardonable sin.'

'From desperate attempts at self-destruction, from groundless fears of poverty.'

'From the delusion that all the food brought to her is poisoned, and refusing to take any; that she has cats and dogs in her stomach and about her room, and expressing a desire to commit suicide.'

'Great taciturnity; complete seclusion from society; aversion to cleanliness, and having no fixed ideas about anything; wandering about the streets at improper hours.'

'*Of an old man aged* 83.—Mental and moral incapacity, and perverted feeling and views with regard to women and female children; personal habits uncleanly and slothful.'

'Inability to hold any rational conversation; her manner and conduct are totally at variance with her usual habits.'

'He states that he is a Prince of France; that he possesses a palace, and has recently had two fortunes left him—one of 400,000*l.*, the other of 600,000*l.*; that he is going to Liverpool, a distance of 160 miles, with a horse and cart, that will take him four hours to go, and eight to return.'

'From his being subject to epileptic attacks, followed by incoherence, and occasionally uncontrollable violence.'

'He is incapable of judging between right and wrong; and is in such a state of mental debility, that he does not recognize persons who are closely related to him, and who have recently been with him.'

'Violent excitement, with rapid, incoherent, and obscene speech.'

'*That* she is outrageous in her conduct and incoherent in her statements;

when questioning her upon rational subjects, she immediately became very violent, rushing downstairs in a state almost of nudity, and locking herself up in the coal-cellar.'

'He fancies himself to be a large shipowner, and offers those about him the command of his ships; he is also incoherent and violent.'

'A general restlessness and perturbed manner. When asked to sit down, he says, "I can't sit down;" to put out his tongue, "I can't put out my tongue;" if he eats his food, he replies, "he can't eat food; he can't swallow; that he has no throat; that he never eats anything; that his feet are broken, and his hips are broken—that he is altogether broken." He lies in bed, and when asked to get up, he says, "I can't get up;"—all of which sayings are delusions, and not true. He does get up, and he does sit down; and he does eat, drink, and sleep; and his feet are not broken; nor has he received any injury to his ribs or hips.' (Millar's 'Hints on Insanity,' 1861, pp. 80-86.)

As every medical certificate, although accepted by the Commissioners of Lunacy, may become at a future time a subject for close and hostile criticism in Court, a medical practitioner should be fully prepared to justify the use of any terms which he has employed. It is therefore desirable that he should studiously avoid any misstatement or exaggeration of the symptoms. One of the facts cited as indicative of insanity in an old lady was, that she kept a cockatoo! In a late investigation respecting the sanity of a lady, one of the experts examined as a witness gave as a proof of unsoundness the fact that she 'revoked' at whist in a way no sane person would have done, which led to a question from the examining counsel whether he had not himself sometimes revoked! The witness was obliged to admit this, which called forth the remark from the learned counsel that he hoped the fact was not to be taken as an indication of insanity. It would appear that the practice of selecting weak and irrelevant facts is also carried out in Scotland. The Scottish Commissioners in Lunacy state in their report for 1865, that in the course of that year a patient was brought to a lunatic asylum with the certificate of a medical practitioner giving (by way of compliance with the statute) as the *fact* observed by himself in proof of insanity, that the patient 'has a great desire to appear conspicuous as a musician.' In the case of *Davies* the teadealer, Lord Brougham, then a counsel at the bar retained to oppose the Commission against the alleged lunatic, elicited from one of the witnesses, as a fact upon which he relied to indicate insanity, that when asked the question, Mr. Davies did not know how much money he had in his pocket! Another relied upon the fact, as indicative of weak mind, that the alleged lunatic had said he preferred seeing the people coming from Epsom races rather than the racing on the course! Vague and trivial facts which do not indicate insanity, or indicate it doubtfully, naturally tend to produce a feeling in the minds of the Court and jury the very reverse of that for which they are brought forward. Thus in the case of Mr. Davies, although there could be no doubt, from what subsequently occurred, that he was a lunatic and a fit and proper person to be placed under restraint, yet the eloquence of Lord Brougham, and the result of a skilful cross-examination in bringing into prominence the weakness of the facts on which the witnesses relied to establish insanity, had such an influence with the jury that they returned a verdict in favour of the lunatic, and for a time he was considered as the unhappy victim of an unjust persecution on the part of his mother and other relatives! In a case referred to by Dr. Bucknill, one of the medical men certifying to the insanity of a gentleman, who was at that time undoubtedly insane, had stated as facts *observed by himself*, that 'his (the patient's) habits were intemperate, and that he squandered his property in mining speculations.' But on cross-examination in the Queen's

Bench, he was obliged to confess that the only act of intemperance he had actually observed was the patient's drinking one glass of beer, and that the squandering of property was the loss of what was to him a mere trifle in a mining speculation, which eventually turned out to be a very good one. (Millar's 'Hints on Insanity,' 1861, p. 187.) Counsel properly hold a medical practitioner strictly to the common and accepted meaning of the words which he uses. If strong points are not forthcoming as evidence, the proof of insanity must fail. Weak points generally show a weak case, and they should never be brought forward or employed by a prudent witness.

No professional man is compelled to take upon himself the responsible duty of signing certificates of insanity; but if he does undertake it, he must perform it with reasonable care and ordinary skill. If he certifies that a person is labouring under delusions, he must take care that he understands the meaning of the term; and, admitting that he is correct in believing from his own observation that they exist in the mind of the patient, it must be remembered that, in order to justify restraint or imprisonment in an asylum, the law looks always to the influence of these delusions upon conduct. The case of *Hall* v. *Semple* is in this respect most instructive to medical men (p. 519, *ante*). One of the charges against the defendant was, that the medical certificate signed by him was false and untrue. Two certificates were issued, one by the defendant and the other by another medical man, in the usual form; and the *facts* on which the conclusion respecting the insanity of the plaintiff was based, were thus set forth in the first medical certificate:—

'1. Facts indicating insanity observed by myself:

'He had a wild and staring look, with restless eyes, and nervous agitated manner. He represented to me that his wife was ruining himself and business, and he intimated that she was improperly associating with other men; he is evidently labouring under delusions, and he acts upon those delusions.

'2. Other facts (if any) indicating insanity communicated to me by others:

'He is guilty of repeated acts of violence; he constantly threatens his wife, and often assaults her; he sleeps with a drawn sword by his bedside, and declares he will murder anyone who approaches him, and he has often threatened to stab his wife.'

The second medical certificate was as follows:—

'1. Facts indicating insanity observed by myself:

'He had a restless, irritable, and excited manner, with a wild and glaring look, and expressed much vindictiveness towards his wife, and said, "I must be a —— fool to mind what that woman has said!" He stated that she had her fellows continually running after her, and intimated that I was one of them.

'2. Other facts (if any) indicating insanity communicated to me by others:

'On a former occasion when I had called to see him he had just before broken the looking-glass to pieces, also the marble mantelpiece and bedstead; had been brandishing knives over his wife's head, and using horrid language; sometimes kicking her, tearing her bonnet and clothes off, and all without provocation, as I find from neighbours and old acquaintances that she is a discreet, sober, prudent, and patient woman.'

It will be observed, by comparing these 'facts' with those above given by Dr. Millar, that they belong to the class which are vague and which offer no evidence of insanity. The facts were chiefly obtained from his wife, on whose statements the defendant placed strong reliance. The cross-examination of the medical gentlemen who signed these certificates failed to support their views that plaintiff was or had been insane, or in a state of mind to justify his removal by force from his home. No regular examination of the plaintiff *had taken place*, and it came out in evidence that some of the so-called delu-

sions had a foundation of truth. In fact, it was conclusively proved that the quarrelsome husband of an equally quarrelsome wife had been confined as a lunatic at the instigation of the wife, and that for some years she had been unsuccessfully attempting to obtain certificates of his insanity from medical men; but they very properly refused to sign them. There was, apparently, as much reason for confining the wife as for confining the husband. The medical man who signed the second certificate defined the plaintiff's insanity to consist in 'diseased feelings,' likely to lead to violence and murder, and 'manifested by a disinclination to see his wife comfortable!' But, as it was remarked by the judge, 'A man might detest and hate his wife very much, and be guilty of brutal conduct towards her, and yet not be insane.' In addressing the jury he said:—'It is plain there was great bitterness on both sides; and it is clear that the wife had for some years been trying to get rid of her husband by having him put into a lunatic asylum, and that the certificates of insanity arose from her suggestion. Sometimes a mere examination of the person may be sufficient; but the history of a case, where it is one of doubt or difficulty, is always of the greatest importance; and here particularly so, for the defendant himself stated that on a mere examination of the patient, he could not come to a conclusion without further inquiry. It is said that his opinion was ultimately founded principally on the supposed existence of delusions. A delusion, of course, does not mean a mere mistake of fact. Hundreds of people may have notions that their friends have injured them or their wives deceived them, not founded on fact, and yet these are not delusions as we now use the word. By delusions we understand ideas fixed in the mind without anything to lead any rational being to entertain them. These delusions often accompany insanity, and so are taken to be *indicia* of insanity; and in this case, no doubt, it is extremely important, when so much stress is laid on "delusions," to make up our minds first whether they had any real foundation in fact. Now, I should very much doubt the case of the defendant if it rested on his examination of the plaintiff alone. It was a very short one, and he himself said it led him to no certain conclusion; and what took place at it is doubtful, as the plaintiff and defendant gave contradictory evidence about it. It is agreed he was not there above ten minutes. You will consider what took place on this occasion; but what strikes me is, that at the end of it, the defendant states he was not satisfied, and had not made up his mind. It would be culpable negligence on his part if he did not make due inquiries.'

In reference to the important question of medical responsibility, the following observations occur in the charge:—'The true ground of complaint is the negligence of the defendant and the want of due care in the discharge of the duty thrown upon him; and I think that if a person assumes the duty of a medical man under this statute, and signs a certificate of insanity which is untrue, without making the proper examination or inquiries which the circumstances of the case would require from a medical man using proper care and skill in such a matter—if he states that which is untrue, and damage ensues to the party thereby, he is liable to an action, and it is to that I desire to direct your particular attention. In point of law, if a medical man assumes under this statute the duty of signing such a certificate, without making, and by reason of his not making, a due and proper examination and such inquiries as are necessary, and which a medical man under such circumstances ought to make, and is called on to make, not in the exercise of the extremest possible care but in the exercise of ordinary care, so that he is guilty of culpable negligence, and damage ensue, then an action will lie, although there has been no spiteful or improper motive, and although the certificate is not false to his knowledge.'

The jury found a verdict for the plaintiff,—that the certificate was untrue in effect, and that it had been signed without proper examination and inquiries and without probable cause.

Discharge of lunatics.—In forming an opinion relative to the propriety of discharging a person who has once been confined as a lunatic in an asylum, it is proper to examine the particulars of his case with the same caution as if the object were to confine him for the first time. The question of liberation is commonly restricted, like that of restraint, to cases of mania and monomania. It may so happen that an individual has a lucid interval at the time of examination, in which case it will be necessary to make more than one visit. One who has been guilty of a heinous crime like murder, should never on any pretence be discharged. There are often long lucid intervals in homicidal mania, and it is impossible to be certain that the disease is entirely removed. If the person has manifested the least disposition to suicide, we should be extremely cautious in liberating him: for suicidal mania is often artfully concealed under a cheerful exterior. We cannot always test the propriety of granting liberation by the lightness of the offence for which a criminal lunatic has been confined. The circumstances under which the most trifling offence has been committed, may show that the mind is wholly unsettled with regard to moral responsibility: and such lunatics can never be trusted, even when there is a great improvement in their language and deportment. The unhappy result of prematurely discharging a criminal lunatic was seen in the case of a man named *Thom*, otherwise styling himself Sir William Courtenay. He was shot while rioting with many others near Canterbury, in June 1838. The whole life of this man seems to have been made up of a mixture of eccentricity and insanity. He was guilty of the most flagrant perjury—was tried, found insane, and confined as a lunatic. After the lapse of about six months it was thought that he was so much improved as to allow of his discharge, although even at this time it appears that he fancied himself to be the Saviour! On his discharge he was guilty of many extravagant acts; he collected a number of ignorant persons as his followers, and infected them with his delusion. He resisted the military who were sent to apprehend him, and eleven lives were lost on the occasion! Dr. Forbes Winslow relates that a man was confined in an asylum while suffering from a delusion respecting the fidelity of his wife. For many months this idea was uppermost in his mind, and appeared to absorb all his thoughts. At the expiration of eight or nine months he appeared to be much improved in bodily and mental health, and the delusion had apparently less hold of his imagination. Eventually he cunningly declared that his mind was quite at ease respecting his wife, and that he no longer believed that she had or could have been unfaithful to him. Under a mistaken impression that he had quite recovered, the patient was discharged from the asylum and permitted to return home. In about a week or ten days afterwards he murdered his wife and child, believing that the former had committed adultery and that the child was not his own. For several days after joining his family he appeared quite well, so clearly and effectually did he mask his lunacy from those immediately about him. ('Obscure Diseases of the Brain,' p. 215.) A medical man cannot always be responsible for unfortunate consequences of this kind; but these and other similar instances show that great risk is incurred in hastily allowing the discharge of a lunatic who has once been guilty of a crime, however slight, so palpably depending on a disordered mind. On other occasions lunatics have been prematurely liberated, and the most disastrous consequences have resulted. A man discharged from an asylum lived for some days quietly at home with his wife and child, when he suddenly attacked and killed them, his insane delusions not having been completely re-

moved. M. Brierre de Boismont furnishes several examples of the dangers of this proceeding, in which men destroyed themselves after premature liberation. ('Ann. d'Hyg.' 1869, 2, p. 436.)

The 16th and 17th of Victoria, c. 97, has placed certain restrictions on the power of liberating lunatics. Under ss. 83 and 84, the person originally signing the order which is required in addition to the medical certificates, may write an order for the discharge or removal; but under s. 85 this order is of no effect, if a medical practitioner certify that in his opinion such patient is dangerous and unfit to be at large, together with the grounds on which his opinion is founded, unless the Commissioners or Visitors shall, after the production of such certificate, give their consent in writing for the removal or discharge of such patient. Under other clauses, additional powers of discharge are given to the Commissioners and Visitors, subject to such restrictions as to leave the control for the most part in the hands of professional men. These powers of discharge do not, however, apply either to criminal lunatics, or to those found insane under a Commission issued by the Lord Chancellor.

CHAPTER 94.

TESTIMONIAL CAPACITY OF LUNATICS—LUNATICS AS WITNESSES—INTERDICTION—COMMISSIONS OF LUNACY—EXAMINATION OF ALLEGED LUNATICS—MEDICAL AND LEGAL TESTS OF COMPETENCY.

Testimonial capacity of lunatics.—A question of some importance has arisen regarding the admissibility of the testimony of lunatics concerning facts which they allege they have witnessed. According to Mr. Fitzjames Stephen, madmen in respect to competency as witnesses, are precisely on the same footing in relation to testimony as in relation to crime. If they understand the nature of an oath, and the character of the proceedings in which they are engaged, they are competent witnesses, whatever may be the nature or degree of their mental disorder. ('Criminal Law of England,' p. 288.) As ancient legal dicta on this subject, we find the following:—'An idiot shall not be allowed to give evidence (Co. Litt. b. 6; Gilb. Evidence, p. 144) nor a lunatic (Ib.) except during a lucid interval (Archbold, 'Pleading and Evid. in Crim. Cases,' p. 124); but it is now known and admitted that the shades of insanity are infinite,—that some lunatics are as fully competent to observe and remember facts, and to understand the obligations of an oath, as persons who are sane; hence, therefore, incompetency to give testimony must not be inferred from a mere name assigned to the malady under which a person is labouring, but it must be decided by the special condition of the lunatic. Under any other view, crimes of the greatest enormity might be perpetrated in lunatic asylums without the possibility of convicting the offenders. It has been appropriately remarked by a good authority, that the fact of incompetence to testify is not necessarily connected with a state of insanity; and it would be far more correct to consider it an independent fact to be established by a distinct order of proofs. The truth is, an analogy in a medico-legal sense has been too hastily assumed between the act of testifying and that of performing business-contracts and other civil acts; and, in consequence, it has shared with them in the same sentence of disqualification without an attempt to ascertain the kind and degree of intellectual power which they respectively require. (Ray, 'Medical Jurisprudence of Insanity;' and 'Medical Gazette,' vol. 47, p. 150.)

In the case of *Reg.* v. *Hill*, tried at the Central Criminal Court in the spring

of 1851, the evidence of a man named Donnelly was tendered on the part of the Crown. ('Jour. of Psychol. Med.' 1851, pp. 279 and 436.) This man was a pauper lunatic, and was confined as such in the same ward with the deceased, who it was alleged had been maltreated and killed by the prisoner. It was quite clear from the cross-examination of Donnelly at the trial that he laboured under insane delusions that he was constantly visited by spirits, &c.: but, nevertheless, he gave a clear and consistent account of the mode in which deceased was maltreated by the prisoner; and although he professed his firm belief in the existence of spirits and their secret power of communicating with him, he appeared to have a full knowledge of the difference between truth and falsehood. His evidence was received, and upon this the prisoner was convicted. The case was subsequently argued in the Exchequer Chamber before all the judges, and decided in favour of the admissibility of the evidence. It may now therefore be considered as settled, that a lunatic who labours under delusions, but who in the judgment of a medical practitioner is capable of giving an account of any transaction that happened before his eyes, and who appears to understand the obligation of an oath, may be called as a witness. (*Reg.* v. *Hill*, 'Denison's Crown Cases,' 2, p. 254.) The rule laid down by Baron Parke is in accordance with this view: it is for the judge to say whether the evidence of the witness is admissible, and then his credibility is a question for the jury. In the spring of 1852 I saw Donnelly, the witness in the above case, in the Colney Hatch Lunatic Asylum; his powers of observation and reasoning were then very acute and quite sound, except when reference was made to his peculiar delusions regarding spirits.

In another case, on appeal at the Middlesex Sessions in December 1852, the testimony of a lunatic was tendered on the part of the respondents, but objected to on the ground that his insanity rendered him incompetent as a witness. The Assistant Judge then said:—'I have had a consultation with Mr. Baron Parke, and I confess I look with fear at what may be the ultimate consequences of the law on this subject. This is the course to be adopted:—the witness who is tendered is first to be examined on the *voir dire*, and then he is to be cross-examined; witnesses may be called on both sides to show his competency or incompetency; and it will then be for the Court to judge whether he should be admitted as a witness, and if it is decided in his favour the man may be examined. In fact, the Court become Commissioners in Lunacy. Now, whatever might have been the state of his mind before all this takes place, supposing the lunatic even to be competent to give evidence before this examination and cross-examination, I should think that anybody who has visited lunatic asylums, or knows anything about persons of insane mind, would agree with me that the chances are that his mind will be so overbalanced as to render him unfit to give evidence afterwards. When this was argued on a former occasion, a case was mentioned in which a man was acquitted upon a charge of murder on the ground of insanity, and another man (while the lunatic was in prison, subject to Her Majesty's pleasure) was committed to the same prison charged with another murder. He made a confession to the first man, and it was proposed on the part of the Crown to call this man, who was acquitted because he was insane, to give evidence of the confession that the sane man had made to him; and after an argument the learned judge who presided was about to give permission for him to give evidence, when the foreman of the jury said:—"My Lord, I do not know what your Lordship means to decide, but I think it right to tell you that the jury will not believe a word he says." Upon this the witness was not called.'

It was then proposed by counsel to call a medical gentleman under whose care the lunatic had been. He would state his competency to give evidence, and he should then put the witness in the box, and the learned judge would

remember that on the last occasion the witness was perfectly conscious of all that was going on, although a little irritable. The Assistant Judge observed, that it was an important question; for he supposed that now in appeals against lunatic orders, the lunatic himself would be frequently produced as a witness. He would only say, generally speaking, that he hoped no man would ever be brought from any asylum to be examined, without the principal medical officer of that asylum accompanying him in order to speak to the state of his mind.

Dr. Huxley, resident medical officer and superintendent of the Kent County Asylum, under whose charge the lunatic was, was then examined, and gave as his opinion that he could speak correctly to *facts* that occurred before he became insane. A witness came forward and spoke to the accuracy of the statements contained in a paper written by the man. The lunatic was then himself called,—examined by the judge and cross-examined on the *voir dire.* The Assistant Judge decided that he might be sworn and admitted to give evidence, which was done, and he proved the facts of the respondents' case. Having heard his examination, the Court had no doubt that they ought to believe him; the witness had evinced considerable power of memory.—*Order confirmed.*

In *Reg.* v. *Coggle* and *others*, tried before Lord Campbell at the Nottingham Lent Assizes of 1856, the evidence of a lunatic was received on a trial for felony. The prisoners were charged with highway robbery, and the prosecutor could not clearly speak to their identity. A man named Bourne witnessed the transaction and swore positively to two of them. Previous to the trial, however, this man was attacked with insanity, and at the time of the trial was confined in an asylum. He was produced as a witness, and gave his evidence in a clear and calm manner. It was received, and upon it chiefly the prisoners were convicted. In *Reg.* v. *Slater* and *Vivian* (C. C. C. Sept. 1860) the evidence of two lunatics was received, but their statements were uncorroborated, and the jury by their verdict rejected their evidence.

INTERDICTION. COMMISSIONS OF LUNACY.

By interdiction we are to understand the depriving of a person labouring under mental disorder of his civil rights; in other words, preventing him from exercising any control or management over his affairs. It may be with or without restraint, for one condition does not necessarily imply the other, although there is a popular idea to the contrary. In *Re Smith* (June 1862) an order for a jury was issued to try the question of sanity or insanity, and in affirming the order the late Lord Justice Knight Bruce enunciated the following proposition:—'It is desirable to remove the idea, but too generally entertained by persons (common persons) in different stations of life, that the finding by a jury that a person is of unsound mind, necessarily involves an interference with his personal freedom: it does not. The Court places no further restraint upon a lunatic than is necessary for his protection, and I would refer to the fact that there are several lunatics living under the protection of the Court who reside in their own houses with large establishments.'

When a person, from mental incompetency, is liable to be imposed upon by others, or is guilty of foolish and extravagant acts, whereby his property is damaged, a Commission is commonly granted by the Court of Chancery, in order to determine whether he be '*compos*' or '*non compos mentis.*' This writ is well known under the name of '*de lunatico inquirendo.*' Before it can be issued it is necessary, among other matters, that there should be affidavits made by two or three physicians or surgeons, certifying to the insanity of the party. It has been already explained that the object of the Commission is to determine

whether the incapacity to manage affairs is owing to some *mental* defect or disorder, and not merely to want of education or bodily infirmity—otherwise all wealthy minors and infirm persons might be improperly deprived of the control of their property. Formerly Commissions were not issued unless it was evident that lunacy or idiocy existed—for weakness of mind or imbecility was not considered sufficient to justify legal interference. This is no longer the case, 'unsoundness of mind with incompetency' being all that the law requires to be established. Thus then, whether the case be one of mania, monomania, or dementia is not now the question, but whether the party be *compos* or *non compos mentis*: if the latter, whether it be to a degree to prevent him controlling his property with careful and provident management. There was a strange contradiction in our system of jurisprudence some years ago. A person who had a delusion on a particular subject, although not affecting his social duties, was deemed a fit subject for a Commission, and deprived of his civil rights merely because his mental disorder would fall under the definition of lunacy. On the other hand, one who had no delusion, but great mental weakness, such as to incapacitate him for properly managing his affairs, was not deemed a fit subject for a Commission; since weakness of mind and insanity were considered to be two entirely different states—the latter alone requiring interference, although the injurious results were the same in both cases.

It is unfortunate that these Commissions have been hitherto conducted on so expensive a scale as to render them applicable only to the wealthy classes of society; and even here the expenses attending such a simple inquiry as that for which the Commission is issued, are often of the most ruinous kind, and the results are by no means satisfactory. [See the cases of *Mr. Davies*, *Miss Bagster* (July 1832), *Lady Kirkwall* (Feb. 1836), *Mrs. Cumming* (1846), *Mr. Windham* (1861–2), and others.] When insanity is pleaded in a criminal case, one judge and twelve jurors will decide the question, affecting as it does the *life* of a person, in a few hours, and at very little expense to the country! It is difficult to understand why, in a question of competency to manage affairs, so many more functionaries should be required, so much more time (sometimes amounting to thirty days) occupied, so many witnesses examined, and such enormous expenses incurred. The property of tradesmen, and other persons of small means, is under such a system left unprotected. This expensive process of wasting an alleged lunatic's fortune in order to determine whether he is or is not likely to waste it himself, leads to the result that, compared with the number of lunatics under confinement, the inquisitions are very few. Out of 3,774 persons above the pauper class confined in 1850, there were only 238 cases in which inquisitions were held—*i.e.*, there was only one lunatic in eleven whose property was thus protected by a Commission, apparently because the protection involved a greater waste in costs than if it were left unprotected! ('Med. Gaz.' vol. 46, p. 1,023.) From a published report it appears that from the passing of the Lunacy Regulation Act in 1853, down to the end of April 1862, there were 575 inquiries in cases of lunacy, but in only 21 of them was there a trial by jury. Of these last, twelve trials occupied one day each; three took two days each; one, three days; three, five days; one, nine days; and one monster case, thirty-four days.

In introducing a new Lunacy Act in February 1862, the Lord Chancellor stated that in the commission on *Sir Henry Meux* the expenses amounted to 6,941*l.*; in the case of *Mrs. Cumming*, whose insanity was manifested the moment she appeared before the jury, the costs were 5,000*l.* In another case the expenses were 1,999*l.*, of which 250*l.* were the costs of the witnesses alone; and in the case of *Mr. W. F. Windham* the trial lasted thirty-two days, at a cost on each side of about 15,000*l.* Under the amended law, no Commission

of Lunacy can be had at a less expense than 60*l.*, and this only in uncontested cases.

By a new regulation, the Lord Chancellor has it in his power to direct an inquiry before one or two commissioners, in which case a jury is dispensed with. Evidence may then be received, and the decision left with the commissioner or commissioners so appointed. The costs of an inquiry by this regulation are greatly reduced. This form of proceeding was adopted in reference to the *Earl of Kingston* (April 1861), and the Master—(Warren) speedily brought to a close by his decision, a case which under the jury system might have been protracted for two or three weeks. The Lunacy Regulation Acts are the 16th and 17th Vict. c. 70 (1853), and the 25th and 26th Vict. c. 86 (August 1862). The last-mentioned Act has greatly improved proceedings in lunacy, and has removed much of the injustice which formerly prevailed. In order to shorten these inquiries and lessen the expenses, the order under s. 3 is to be confined to the question whether or not the person is 'at the time of unsound mind and incapable of managing himself and his affairs.' No evidence on his conduct is to be received as a proof of insanity unless it refers to a period within two years of the date of the inquiry. In cases of contested imbecility this provision might exclude important evidence, but there is a discretionary power in the judge to admit it. Section 4 allows of the case being tried by a jury at common-law. The alleged lunatic is to be examined before the taking of the evidence, and also at the close of the proceedings before the jury consult on their verdict. Under s. 12 power is given to the Chancellor to dispense with commissions in reference to persons who have but small property, and there are in this statute other strict rules regarding the visiting of lunatics confined in asylums.

One source of difficulty on these occasions is, that selected medical witnesses are allowed to be summoned by both parties, and the opinions given by them often exactly neutralize each other; they are hereby converted into partisans in the cause as much as if they were counsel. It has been well remarked, that a man even unknown to himself, with the purest intentions and the most perfect rectitude, will insensibly lean to the side on which he has been consulted or employed. ('Pagan,' p. 301.) The public are apt to infer, from such conflicting opinions emanating from men of apparently equal experience, that the difference cannot depend essentially on the *medical* facts of a case, and that the question might as well or even better be determined by non-professional persons. See the case of *Carpenter* ('Dublin Med. Press,' July 16, 1845, p. 46); also that of *Mrs. Cumming*, in which the conflict of medical testimony was even greater than usual. A large portion of this lady's property was spent in determining by a verdict that she was insane; and there was an intention that the remainder should be expended in reversing the decision, when the unfortunate lady died. (The reader will find an elaborate report of this remarkable case in the 'Journal of Psychological Medicine' for April 1852.)

One remedy for this serious evil would be, that medical experts on such occasions should be appointed by the Lord Chancellor, to examine an alleged lunatic and give evidence on his condition; they should be in all cases made perfectly independent of both parties. At present they rather occupy the position of medical counsel than medical witnesses, for it is quite clear that no one would be summoned whose views did not coincide with those of the party summoning him; and it is an opinion among some solicitors—for which, unfortunately, there is apparent reason—that medical evidence in such cases is a marketable commodity, and may be purchased at graduated prices! There are some medical men who appear to think that on these occasions they are justified in sinking the witness in the advocate, and that they are bound by a

sort of duty to make the best of the case for the person who retains them; but this is a mistaken view of their position. An advocate is not bound by an oath to state 'the truth, the whole truth, and nothing but the truth;' but a scientific witness is placed under this sacred obligation, and it is a duty which he owes to his profession and to society that he should lay aside all personal bias. It may appear an innocent matter to suppress some facts and to exaggerate the importance of others, in order to induce a jury to pronounce one whose mental soundness is in question to be perfectly sane and competent; but the same mercenary zeal which would thus lead to the civil freedom of an insane person, might on another occasion be employed in unjustly depriving a sane person of his liberty. The confidence of the public in medical opinions in reference to the insane has been by recent events already much shaken; and it would be altogether destroyed, and such opinions entirely dispensed with, if it were once known that a medical man on these occasions accepted a retaining-fee not to speak the whole truth, but, rightly or wrongly, to give his evidence in favour of the party who consulted him. Whatever may be the difficulties of the case, experienced solicitors know that if they only search far enough they will generally fall upon some medical men who will adopt their views. (The reader will find some remarks on this subject in the 'Medical Gazette,' vol. 5, p. 719; vol. 11, p. 740; and vol. 17, p. 816.)

A proper course of proceeding was adopted in *Re Taylor* (April 1857). This gentleman had been examined by seven medical men, three of whom pronounced him to be of unsound mind, and four declared him to be perfectly sane, but with an impaired memory. There was here a majority of one in favour of sanity. The Lords Justices then deputed Dr. F. Winslow to examine and report on the condition of the lunatic for their special information. He reported in favour of soundness of mind, admitting the existence of defective memory partly arising from age, but not to so great a degree as to render him incompetent to manage his affairs. The decision of the Court was in accordance with this view.

The law of Scotland has, in reference to these cases, the advantage over that of England in simplicity and justice. A factor is appointed, on the application of relatives, to take charge of the property; notice is given to the alleged lunatic, so that he may, if he pleases, oppose the appointment; medical evidence is received and upon this, the decision of the Court is chiefly based. The appointment, if made, can at any time be revoked upon good and satisfactory grounds.

Examination of alleged lunatics.—To determine whether a person is or is not a fit subject for interdiction or the deprivation of civil rights, it is necessary to bear in mind that it is not enough to show there is *delusion*, as in the lighter cases of monomania; but we are bound to ascertain how far the delusion affects his judgment, so as to prevent him, like other men, from managing his affairs with provident care and propriety. In many instances, however, some proof of *delusion* only is sought for; and if this be procured, it is hastily inferred that the person must be entirely incompetent to manage his property. The most difficult cases are those which involve questions of imbecility. In conducting the defence of the *Windham* case (Dec. 1861), Sir Hugh Cairns was allowed by his medical advisers to make the following strange statement: 'In a case of insanity accompanied by delusions, the mode of investigating it so as to arrive at the truth is a matter of great difficulty and doubt; but in a case of imbecility, where there is either no mind at all or next to none, the task of coming to a right and just decision is comparatively easy.' Such a statement is the reverse of the truth, and must have been made under some hazy notion that the state of imbecility was identical with that of idiocy. One of his own witnesses (Dr. Sutherland), in a subsequent

stage of the proceedings, corrected this error, by the admission in cross-examination, that 'drawing the line between soundness and unsoundness of mind in cases of imbecility is one of the most difficult questions of medical science.'

In conducting the examination of an alleged lunatic, we should compare his mind as it is with what it has been; and if it be a case of supposed imbecility, a proper regard must be had to age, society, education, and general conduct. We should also consider whether the person has been treated by his friends and relations as a lunatic or an imbecile prior to the issuing of the commission. A young person whose education has been much neglected, and who has never been entrusted with the care of money, cannot be expected to have much knowledge of the method of managing a large property. Questions are sometimes put on the moral responsibility of man and the attributes of God to one who perhaps never heard of ethics or theology. Again, mathematical and arithmetical questions, which would embarrass many persons who are set down as sane and competent, are sometimes put in cases of alleged imbecility. In one instance a physician gave evidence on a commission that he found the alleged imbecile could not work the first proposition in Euclid, but this person admitted that he had always disliked mathematics. In a case which occurred in Scotland, one examiner asked the alleged imbecile, who said he had 1,200*l.* in the Bank, and received 20*l.* for interest,—How much was that per cent? He said he could not tell: he was no good hand at arithmetic. The counsel who appeared against the brieve of commission afterwards put the same arithmetical question to one of the medical witnesses who had deposed to the imbecility of the party; and this witness, an educated man, confessed himself quite unable to answer it—a practical illustration of the impropriety of pronouncing a person to be imbecile or incompetent merely because he is ignorant of that which he has never been taught! (Case of *David Yoolow.*) If the capacity to manage affairs rested solely upon a knowledge of arithmetic, many now go free who ought to be immediately placed under interdiction. This is rather a commercial test of insanity: but it will be found that it has been applied in a very improper manner to determine the mental capacity of young and ill-educated women. Unless the questions are confined to those subjects which the person has had either the opportunity or inclination to learn, a medical witness will always incur the risk of confounding mere ignorance with imbecility.

One of the best tests of mental capacity will be found in determining the degree to which, with ordinary opportunities, a person has shown himself capable of being instructed; but too high a standard must not be assumed as a test of capacity. The mind of an alleged imbecile should not be compared with the most perfect mind, but with that of another person of average capacity, of the same age and station in society, and who has enjoyed like opportunities of instruction. It would be difficult to find two sane persons who were exactly equal in mental power: in some, one faculty is prominently developed, in others another. All that we have to look for in these cases of alleged unsoundness, is an average degree of intellectual development so as to qualify the person for performing the duties of his station. To win the confidence of an alleged lunatic for the purpose of examination, we should not treat his observations or delusions with levity, but rather seriously sympathize with him in his troubles; we should listen attentively to all he has to say, for his suspicions will be excited by many questions being put to him. If we cannot agree with his conclusions, we should not contradict him abruptly, but endeavour to draw him out by asking for some corroborative evidence of his statements. Dr. Millar has properly advised that, before visiting the patient, we should make ourselves thoroughly acquainted with every particular con-

nected with his history and condition, and treat him as much like a sane person as possible. The insane are exceedingly suspicious, and quick to detect any deceit practised on them. They are also jealous of the intrusion of strangers, and, unless great tact is employed, will look upon a medical man as an enemy, and treat him accordingly. ('Hints on Insanity,' p. 58.) The patient should be informed that his perceptions are merely the result of natural disease; it is useless to tell him that he is under a delusion when his perceptions, although sometimes exaggerated, are too real to be doubted. (Op. cit. p. 36.)

The conflicting medical evidence given on Commissions of Lunacy is in great part to be ascribed to the fact, that the whole of the mind of the person is not fairly examined. One physician tests one faculty, another another; each has his own theory of insanity, and each his standard of competency. The witnesses in support of the commission do not go so much to test the actual state of mind of the person, as to discover what they deem proofs of insanity; those against the commission take an opposite course—they look only for some proofs of soundness. It cannot therefore happen otherwise than that different conclusions should be drawn under such different modes of investigation. (See vol. 1, p. 32.) There is another point which requires attention in these cases. Persons labouring under slight degrees of imbecility are very soon irritated; they are easily persuaded that they are ill-used and persecuted; and when they happen to be questioned by parties who are represented as their enemies, they lose their self-command, and are no longer able to answer questions, which under their ordinary state of mind they would reply to with perfect accuracy. (Pagan, Op. cit. p. 302.)

A defective *memory* must not be hastily set down as a proof of legal unsoundness. In a case which came before the Lords Justices Bruce and Turner in August 1855 (*Re Toplis*), the petitioners for a commission appeared to have relied chiefly on a defect of memory in a person who was advanced in life. The Lords Justices, in dismissing the petition with costs, made the following observations:—'Mr. Toplis's powers of recollection were impaired and defective; but this at advanced periods of life and also at periods not advanced, was a common defect. A man might have a bad memory but be competent and efficient, and no man would venture to suggest that a person could not discharge the business of life because he had a bad memory. The memory, indeed, might be so deficient as to bring a man within the technical description of unsound mind, but it could not be suggested that this was the case with Mr. Toplis. He appeared to recollect the events of his early life with readiness and freshness, and the more recent the event was, the sooner it faded from his memory; but, bad as his memory might be, he had more than sufficient mind, within the ordinary meaning of the term, to enable him to manage himself and his affairs.' Dr. Southey, who had been instructed by their Lordships to examine Mr. Toplis, made use of the following expressions in his report: 'With a memory so deficient, it can hardly be said Mr. Toplis is of perfectly sound mind.' In one sense this might be true; but, as their Lordships observed, there was a technical meaning of these words, in reference to which they dissented from their use. A man may not have a perfectly sound mind, and yet have a mind sound enough for the management of his affairs. A defective memory in an aged person, taken alone, proves nothing. (See 'Ann. d'Hyg.' 1836, 1, 192.)

CHAPTER 95.

COMMISSIONS OF LUNACY—MEDICAL EVIDENCE—LEGAL TEST OF COMPETENCY FOR CIVIL ACTS—EVIDENCE FROM HAND-WRITING—CASES OF MISS BAGSTER—W. F. WINDHAM—CONFLICTING MEDICAL AND LEGAL OPINIONS—SUPERSEDING OF COMMISSIONS.

In giving evidence on Commissions of Lunacy, a witness must take care not to allow himself to be embarrassed by medical or legal definitions of insanity. The malady may not assume the form of lunacy or idiocy, in a strictly legal view—nor of mania, monomania, dementia, or idiocy, in a strictly medical view; but still it may be a case of *such mental disorder* as to create *an incapacity for managing affairs.* This is the point to which a medical examiner has to direct his attention. Cases of imbecility present the greatest difficulty, and create the greatest conflict of opinion among medical witnesses. Imbecility strictly implies a weak or feeble mind, and the term is properly applied to one who has an intellect below par or below the normal average. The vagueness of these terms shows how difficult it is to draw a clear distinction between legal sanity and that degree of mental weakness implied by imbecility which would justify interdiction. Insanity in the common acceptation of the term cannot be proved in these cases: there will be no evidence of delusion, and there may be such an amount of self-control as to enable a person to maintain a conversation. Memory, judgment, and other faculties, although weak, are still present in a greater or less degree; and from one or two interviews only, an examiner might be disposed to pronounce the person of sound mind and competent to manage his own affairs. There is a wide field for argument here; for it may be said with some truth, in a defence, 'that the doctors cannot put their fingers on a single point indicative of insanity.' In short, each fact specified by them may be frittered away by the remark that every one must have known some person who had either a bad memory or a weak judgment; who squandered money, who wasted it on unworthy objects, who hoarded it and refused to pay just debts, or who lost it in foolish speculations, &c. All this may be true, and yet the person in question may be legally of unsound mind and properly interdicted. As Dr. Pagan justly remarks, there is a facility of disposition in an imbecile or weak-minded person, which lays him open to be imposed upon by the artful and designing; and our conclusion regarding his competency must be the result of a just appreciation of his general knowledge of affairs, derived from an examination of *all* his faculties. We have to consider how far his imperfect mind would prevent him from attending to his own interests, not in a manner which would ensure their most profitable application, but in such a way as would prevent his affairs from being involved in ruin. His knowledge and understanding may be so imperfect that his property would necessarily run to waste under his unassisted control. When it is proved that there has been habitual submission to the dictation of others, either from a long habit of being controlled, from indifference, or fear—when a man has allowed himself to be disobeyed or neglected by his servants, and to be openly cheated by tradesmen,—these circumstances furnish evidence of weakness of mind, and a justification of the opinion that there should be interdiction. (Op. cit. p. 293.) On the other hand, if a person when left to himself has managed his affairs with reasonable care and propriety, has acted independently of others, and has been treated by his friends and those around him as if he were sane, there can be no stronger proof of legal competency. The *testamentary* capacity of imbeciles may be tried by the same rules. A man who is of such an easy disposition as to be improperly influenced in the use of his property

while living, may be equally influenced by fear or control to make an improper disposition of it by his will; but in this case the terms of the will, if drawn up by himself, will allow a fair judgment to be formed of the mental soundness of the testator.

Evidence of insanity from hand-writing.—There is on these occasions a method of testing the state of mind which has been suggested by Dr. Conolly—namely, by inducing the patient to express his thoughts in writing, as in a letter addressed either to his physician or to some confidential friend. This plan would probably often succeed in developing the existence of a latent delusion, when an examination would wholly fail; the patient would not be led to suspect that he was being subjected to an examination for a hostile purpose. The current of his thoughts would be uninfluenced by the suspicion, that the act of writing was to test the state of his mind; and as no man can long write in a connected manner who does not think collectedly, so we may expect to find ample evidence whether a delusion exists or not. An instance of the efficacy of this plan is recorded by Dr. Pagan (Op. cit. p. 19). A lady suspected to be of unsound mind wrote a letter to a friend in which was a quotation from Scripture. She gave a correct reference to the part of Scripture where the passage was to be found—thus, 'Philippians 3 ch. v. 7;' and immediately added, 'These islands lie in latitude north ——, and longitude ——,' most probably referring to the geographical position of the Philippine Islands. Here was undoubtedly a defect in the faculties of association and attention. As this defect exists to a greater or less extent in all cases of insanity, this method is well adapted for testing the state of the mind with or without an oral examination. There are cases recorded in which the evidence of delusion has been derived from the terms of a will or deed written or dictated by a lunatic, when there was great difficulty in obtaining proof by an oral examination.

In idiocy there is no capacity for writing. In dementia, as there is no memory, it commonly happens that the same word or words are written over and over again. No person in a state of confirmed dementia can write a connected sentence, because before the last part of the sentence is completed the first is entirely forgotten. In imbecility we may meet with every variety of mental defect, but the state of the mind is generally indicated by the expression of the thoughts in writing. This method, it must be remembered, cannot show whether or not a person is capable of managing his affairs: it is a mere index of a certain state of the mind, and must be coupled with general habits and conduct before any conclusion is drawn from it relative to the propriety of interdiction. It will often serve to detect the existence of a delusion when other means fail. Some years since I was consulted by a respectable woman who had been housekeeper to the late Dr. Back of Guy's Hospital. Her conversation was on the whole rational, except in relation to the subject of poisoning. The following among numerous other letters which I received from her will plainly show a disordered state of mind; no examination could more clearly elicit the nature, extent, and influence of the delusion under which she laboured.

'Sir will you please to pardon the liberty I have taken) by asking you to be so kind to keep this letter as a witness for me in Case of death as I think will be the Case from the Poison given me in so many things I have now brought A little brandy and some more beer which as made me very ill) and I most humbley aske your pardon if I have don rong by Applying to you as A physician of medicine at the horspitle but I thought any one may do so if the Could Pay and I was Prepard to do so or I would not have taken such A liberty for the world) I have A government life annuity fifty Pounds a year and if I should be found Poisoned will you be so kind to take this letter to *the Parliament* of my own nation to whome I have applied for I now am *afraid to* purchase ayneting any ware.'

Some persons affected with monomania are profuse in their writings. They write and copy letters, draw up voluminous petitions, memoirs, and addresses, in which they set forth the sorrows, grievances, sufferings, and persecutions of which they believe they have been or are the victims. Sometimes they imagine themselves to have the gift of poetry, and that they have attained a poetical eminence beyond all other poets, ancient or modern. A gentleman of my acquaintance in an early stage of mania set himself to work, day and night, in writing out the whole of the Psalms of David, and turning them into what he supposed was an epic poem. He brought to me for perusal many quires of paper, thus closely covered with his handwriting. He thought he had rendered the Psalms into a poem, when he had, in fact, only put the sentences into a metrical form, by dividing them, without respect to sense or meaning. It was with difficulty he was persuaded not to offer the manuscript to a publisher for publication. In some cases of insanity the mind retains a great power for poetical composition and expression. Sir A. Morison, formerly physician to Bethlehem Hospital, found in the pocket-book of one of his patients who had suffered from melancholia, from which he died, the following verses in the handwriting of the patient. They are strongly expressive of the mental depression from which he was suffering:—

There is a winter in my soul,
  The winter of despair;
Oh, when shall spring its rage control?
  When shall the snowdrop blossom there?
Cold gleams of comfort sometimes dart
A dawn of glory on my heart,
  But quickly pass away:
Thus Northern Lights the gloom adorn,
And give the promise of a morn
  That never turns to day.

('Lectures on Insanity,' p. 137.)

These lines not only show a great power of reasoning and a poetical mind, but a complete consciousness in the patient of his condition and of his hopeless state.

Dr. Marcé has remarked that the method of writing is nearly the only plan which can be adopted when the person refuses to answer questions, and maintains a state of taciturnity for days or weeks. If furnished with writing materials, lunatics will often, in secret, voluntarily draw up petitions, addresses, or wills, which will reveal their real state of mind. In feigned insanity this mode of investigation is of great importance. One of the difficulties in the case of Lady Mordaunt, pronounced to be in a state of dementia, was that one of her letters was expressed in terms not showing any incoherency or defect of mind or memory (*ante*, p. 512); but it may be alleged that this was written during a lucid interval. Dr. Marcé has pointed out that monomaniacs known to be most unreasonable in their thoughts and actions have often the power of expressing themselves in writing as if they were sane. ('Ann. d'Hyg.' 1864, 1, 384.) M. Moreau gives as the results of his experience, that among those who are affected with dementia, the mental disorder shows itself in a stronger form when they write than when they speak, while the converse condition is observed in mania. Here they show their insanity in speaking, more readily than in writing.

In a great number of cases letters or papers written by insane persons confirm or reveal in themselves the existence of a disturbed mind, but a perfectly reasonable writing does not always indicate the non-existence of insanity. M. Brierre de Boismont has noticed among the patients under his observation that lunatics are often capable of writing long and very sensible letters between

two of their attacks, or while even labouring under mental disorder. ('Ann. d'Hyg.' 1863, 2, 339, 399.)

Dr. Forbes Winslow attaches some importance to handwriting as foreshadowing the occurrence of general paralysis with softening of the brain. This, however, refers not so much to composition or style as correct writing and spelling. (Op. cit. p. 464.) The reader will find a complete essay on the writings of the insane, with fac-similes of the handwriting of persons labouring under dementia, mania, and other forms of insanity, as well as the medico-legal conclusions to which they lead, by Dr. Marcé, in the 'Ann. d'Hyg.' 1864, 1, 379.

Among many cases which illustrate the medical evidence required and received on Commissions of Lunacy, I would refer to that of *Miss Bagster*, in July 1832; it will serve to show upon what slight grounds a verdict of 'unsound mind' was at that date returned under a Commission of Lunacy. The subject of this inquiry was shown by the evidence to be a frivolous and weak-minded girl, whose education had been much neglected. She was heiress to a large fortune, and contracted a clandestine marriage unsuited to her condition. A commission was taken out by her friends for the purpose of annulling her marriage, by showing that she was not at the time competent by defect of understanding to give rational consent. The general evidence established that there had been great neglect in her education, and that she had been especially indulged; but it did not appear that she had ever been treated by her friends as of unsound mind, nor indeed that any question of her insanity had been raised until *after* the marriage. Seven medical witnesses, summoned to support the commission, deposed that she was of unsound mind. On the other side no witnesses were called, as it was considered that the allegation of insanity was not made out. The Commissioners, however, themselves called Dr. Morison and Dr. Haslam, who deposed that her incompetency to manage her affairs arose not from unsoundness of mind, but from ignorance. She gave one strong proof of her sanity, namely, that she was aware of her deficiencies. It seems to have been allowed that she was capable of controlling herself, and also of concealing her defects; her answers to the questions put to her were pertinent, and were for the most part correctly made, and she had manifested a capacity to receive instruction. She was ignorant of arithmetic, but this she had never been properly taught. She was young and inexperienced, and therefore unable to answer questions relative to the management and expenditure of a household. The jury, by a majority of twenty to two, returned a verdict that she was of unsound mind, and had been so for the space of two years—a time which covered the marriage. (For an excellent medico-legal report of this case, see 'Med. Gaz.' vol. 10, pp. 519 *et seq.*)

It is worthy of remark that the only two medical witnesses independent of both sides, who were summoned by the Commissioners, gave a very strong opinion that Miss Bagster was *ignorant* and not of unsound mind; and that she might, by instruction, be rendered competent to the management of her affairs. We should imagine that when a question arose, whether a young person was or was not to be deprived of all civil rights, there ought to be at least unanimity among the medical opinions; or, if this were denied, then more weight should be given to the negative than to the affirmative side of the question, provided if, as in this case, the negative view were supported by men impartially selected, and of great experience and knowledge on the subject of insanity. It is not improbable that besides ignorance, there may have been some degree of weakness of mind about this person; yet, taking the whole case, we must attribute the verdict of unsoundness not so much to mental infirmity as to incapacity for want of instruction to manage a large fortune. But if every wealthy young lady, whose education had been equally

neglected, had her sanity tested on the same points as Miss Bagster, it is certain that many who are now free agents would be placed under interdiction! It was attempted to justify the verdict by the statement that it saved this lady from the results of an imprudent marriage—the answer to which is, that Commissions of *Lunacy* are not intended to shield persons whose minds are not really unsound from the results of foolish and imprudent acts!

When a verdict of insanity is returned under a commission, it must always represent the party to be of unsound mind, and by reason of that unsoundness to be incompetent to manage his affairs. A date must be fixed at which the insanity first appeared, and this date should always be anterior to the issuing of the commission. If there be lucid intervals, the space of time occupied by these should also be defined.

In the case of *Mr. W. F. Windham* (December 1861) the question raised on the commission was similar to that in the case of Miss Bagster. Fifteen of the relatives of this gentleman petitioned for an inquiry into his state of mind on the ground that he laboured under congenital deficiency of intellect; and on the other side it was argued in favour of Mr. Windham that his mental condition, if below the normal standard, was entirely owing to the results of a neglected education. The inquiry lasted thirty-three days, during which 140 witnesses were examined—namely, fifty on the part of the petitioners, and ninety in favour of Mr. Windham. There was the usual amount of conflicting evidence, medical and general. There was no proof of the want of the opportunity of education, but strong reason to believe that the alleged imbecile had not made use, like other boys of his age, of the advantages which he had enjoyed. He had been sent to Eton, but had derived little benefit from his connection with that great public school. It seems to have been admitted that as a boy he was wholly unlike other boys, and when he attained his majority in August 1861, his conduct was extravagant, wild, and inconsistent with his social position. At the same time he was not entirely deficient in business matters; for it was proved that his uncle, one of the petitioners, had shortly before negotiated with him for the sale of a piece of land of the value of 1,000*l.*, thereby admitting his capacity to transact business. The evidence received on this occasion was allowed to extend to the whole of his life, and it may be observed that in cases of alleged imbecility it is not possible, without doing injustice, to prevent the reception of evidence from a long antecedent date. Imbecility is a congenital deficiency of mental power, and it is therefore always material to show whether this has or has not existed from youth upwards.

A large mass of testimony, much of which was irrelevant, was thereby introduced into the case. The facts mainly relied on in support of Mr. W. F. Windham's incompetency were:—that he was very extravagant in purchasing articles which he did not require at exorbitant prices and in unnecessary quantities; he thus incurred debts of enormous amount without any reasonable prospect of being able to pay them off—that he was guilty of gross indecency of language and conduct in public places, and even in the presence of ladies he appeared to have no sense of shame—that he habitually associated with low characters and prostitutes, and three weeks after he had attained his majority he married a woman of disreputable character, who up to the night before her marriage had been the paramour of one of his associates—that having infected this woman with the venereal disease he gave her presents in jewelry amounting to from 12,000*l.* to 14,000*l.*, and settled upon her 800*l.* per annum for life, as a compensation for his misconduct,—his income at this time not being more than 1,250*l.* per annum. Although this woman after her marriage had cohabited with another man, yet he (Windham) had again lived with her, and had manifested no sense of shame in reference to this act of condonation

of adultery. He was in the habit of dressing himself and acting, sometimes as a detective officer, then as a railway-guard, and on one occasion he locked in a railway-carriage the woman whom he had married and the man with whom she had previously cohabited. The petitioners looked upon these acts as indications of unsoundness of mind and incompetency to manage his affairs with reasonable care and propriety; the ninety witnesses in favour of Mr. Windham regarded them simply as playful eccentricities and boyish tricks! The medical evidence for the petitioners chiefly rested upon Dr. Forbes Winslow and Dr. Mayo: they were appointed as examiners by the Lords Justices, and Dr. Bright was associated with them as assessor. Nothing could be more fair than the mode of testing the mental condition of the alleged imbecile. There were two interviews, lasting altogether three hours. Numerous questions were put on a variety of subjects, but it was found very difficult to induce Mr. Windham to concentrate his thoughts on any one point. Dr. Winslow considered him to be in a state of mental imbecility, and that he was a person of unsound mind incapable of managing himself or his affairs. The degree of mental unsoundness under which he laboured was not inconsistent with a capacity to write letters—to acquire a certain amount of classical knowledge or the ordinary rules of arithmetic—to settle small accounts and make purchases to a limited extent. In cross-examination by Sir H. Cairns the usual stock objection was taken to this opinion—namely, that the witness could not say where sanity ends and insanity begins. Dr. Winslow correctly admitted that it was impossible to trace the line of demarcation. At the same time mental unsoundness might be appreciated; it implied such a degree of mental deficiency as would incapacitate a person for the management of himself and his affairs. Inability to command the attention and incapacity of sustained thought were symptoms of the peculiar kind of imbecility under which Mr. Windham laboured. Deadness to a sense of moral obligations is also frequently observed in such cases. Dr. Mayo in his evidence concurred with Dr. Winslow; he considered that Mr. Windham had a weak and childish intellect and an impure mind; he manifested utter shamelessness respecting the circumstances of his marriage and his conduct before and afterwards. Dr. Southey, also appointed by the Lords Justices to examine Mr. Windham, came to the conclusion that he was labouring under imbecility and was of unsound mind. His conversation was more rational than his conduct, and from conversation alone he could not have come to the conclusion that he was of unsound mind. Further, judging from his private interviews with him, he considered him to be a person of weak intellect, but he 'should hesitate to express the opinion that he was not capable of managing himself or his affairs.'

On the other side, Dr. Tuke had examined Mr. Windham, and came to the conclusion—1st, from his powers of observation; 2ndly, from the manner in which he instructed his solicitors for his defence; and 3rdly, from his delicacy in conversation when there was an opportunity of introducing indelicate remarks—that he was not imbecile. He also thought that his sanity was perfectly consistent with his getting into debt to the amount of 25,000*l.* or 30,000*l.* and giving 14,000*l.* worth of jewelry to his wife. Dr. Seymour, a Commissioner of Lunacy for eight years, examined Mr. Windham, and was with him a sufficient time to enable him to form an opinion of the state of his mind, and he saw nothing to justify him in saying that he was of unsound mind. He was certainly not a lunatic, and he was under no delusion. He was capable of managing himself and his affairs, but the inquiry would have a considerable effect in improving him. Mr. Hancock stated that during his interview with Mr. Windham he neither saw nor heard anything which would justify him in arriving at any other conclusion than that he was of sound mind. *Dr. Hood*, of Bethlehem Hospital, had had several interviews with him, and

considered him to be of sound mind and competent to manage his own affairs. Dr. Sutherland, as the result of an examination and from the evidence heard in Court, considered Mr. Windham to be of sound mind; there were no symptoms of congenital imbecility or of idiocy about him. In cases of imbecility he always went by practical tests, and in his opinion an imbecile should be incoherent in language and inattentive to the calls of nature. 'There was no incoherency in Mr. Windham's conversation.' He was rather below the average in point of intellect, but he did not at all approach the line where imbecility began. No amount of eccentricity should be received as evidence of insanity unless it is accompanied by some unmistakable proof of unsoundness. Dr. Conolly examined him on two occasions, and believed him to be of sound mind; there was not one single indication of unsoundness about him. No medical man could sign a certificate of insanity in his case, and no keeper of an asylum would think of taking him as an inmate.

The Master in Lunacy, Mr. Warren, in addressing the jury said:—'The question to be decided was not whether Mr. Windham was absolutely insane, but whether there was such imbecility of mind, not amounting to actual insanity, as to render him unable to act with any proper or provident discretion, or to render him liable to be robbed by anyone. The broad question was whether he was of sufficiently sound mind to be entrusted with the management of himself and his affairs. Mere weakness of character, mere liability to impulse good or bad, mere imprudence, recklessness and eccentricity, to which might be added immorality, did not constitute unsoundness of mind unless, in looking fairly at the whole of the evidence, there was good reason to refer them to a morbid condition of the intellect. They might furnish evidence of unsoundness but they did not constitute it.'

Mr. Windham then underwent a private examination before the jury, and it is said that he gave proper answers to the various questions put to him. The jury, by a majority of 15 to 8, returned the following verdict—'That Mr. Windham is of sound mind and capable of taking care of himself and his affairs.' After the verdict had been returned pronouncing him sane and competent, he was guilty of other eccentric acts, exhausted a splendid fortune and became a bankrupt; showing that, whatever legal soundness of mind he might possess in the opinion of two-thirds of the jury, he practically did not evince that capacity which they declared him to possess of taking care of himself or his affairs!

A large section of the public joined in the view prominently put forward at the inquiry by his counsel, Sir Hugh Cairns, that this unfortunate young man had been made the victim of a charge the most cruel, unjust, and unjustifiable! Insanity, it was urged, in the ordinary acceptation of the word did not exist in his case. There were no illusions, hallucinations, or delusions; but as these are never met with in the form of unsoundness imputed to Mr. Windham, namely imbecility, their absence proved nothing for or against the existence of imbecility or weakness of mind. But what test is there for imbecility except conduct and conversation? There was no incoherency of language, but there was strong evidence of habits such as we do not meet with among men of really reasonable minds: but opinions were divided on the question, whether these indicated unsoundness of mind, or a mixture of eccentricity and moral depravity from deficient education. A majority of the jury took the latter view; and Lord Chelmsford, in commenting upon this verdict in the House of Lords (March 1862) said:—'The law as laid down by Lord Lyndhurst applied to cases short of insanity, but they must be cases of unsoundness of mind; and mere extravagance or follies, which indicated imbecility, would not be sufficient unless the imbecility amounted to unsoundness of mind.' The legal test of the existence of this state of mind, we are told by high authority,

is 'conduct. A lawyer means by madness 'conduct of a certain character,' while a physician means by it 'a certain disease one of the effects of which is to produce such conduct.' ('Crim. Law of England,' by Fitzjames Stephen, p. 87.) The whole evidence against Mr. Windham bore upon conduct, and from the verdict we learn what sort of conduct does *not* constitute madness in a legal sense. The marrying a woman of disreputable character,—the squandering upon her of 14,000*l.* in jewelry, and settling upon her 800*l.* per annum, with other extravagant acts of a similar kind, do not constitute 'conduct of a certain character' sufficient to render a man *non compos mentis* in the eye of the law; but if these acts evince soundness of mind and a competency to manage affairs, what are the acts which indicate unsoundness or incompetency? On the other hand, we are told that the physician looks to the existence of a certain disease; but a physician can know nothing about the existence of disease of the brain during life in any case of imbecility, except in so far as its effects may be manifested by conduct. We therefore come round to the legal test of 'conduct,' which in Mr. Windham's case was considered to be quite consistent with the provident management of a large estate and a splendid fortune. That the legal test was here a failure in affording protection from wastefulness is proved by the result—the loss of the whole of his property from reckless extravagance!

This case, as usual, drew down upon the medical profession some severe comments; and among others the Earl of Shaftesbury, who had had considerable experience in the working of the law of Lunacy, made the following observations:—'He did not know that medical gentlemen (he said it with all respect), unless they had made insanity their special study, were more qualified to judge of the soundness or unsoundness of mind than any person of common sense and practical knowledge of the world. Mere opinions and scientific speculations ought no longer to be adduced in the Courts as testimony. Whatever evidence was given by a medical man should be facts, and judgment based on these facts. From his own experience of many years on the Commission of Lunacy, he could affirm that medical men who had not made the subject a special study, were as ignorant of mental disease as any one who observed it for the first time. It was to facts, and facts alone, they must look. He thought it a monstrous thing that a medical man should infer, because a person had a cast in his eye, or a particular shaped head, that he must be insane, when in fact he commits no mad act at all. Facts observed by himself ought to be the basis of the evidence of a medical man. He maintained that persons of common sense, conversant with the world and having a practical knowledge of mankind, if brought into the presence of a lunatic, would in a short time find out whether he was or was not capable of managing his own affairs. He perfectly well recollected an instance that showed how little many eminent medical men were acquainted with what was going on in the world, and how they formed an opinion and came to a conclusion without any foundation in fact. When discussing the question of the insanity of a lady, he (the Earl of Shaftesbury) strongly maintained that she was perfectly sane and capable of managing herself and her affairs; a medical man of great eminence took him aside, and told him the lady must be insane, "because she subscribed towards the conversion of the Jews!" Had that medical gentleman been acquainted with what was going on in the world, he would have known that hundreds and thousands of persons of the most sane and solid description were doing the same thing. In the case of another lady, it was argued that she must be insane because she was in the habit of wearing a dagger at her side, and the dagger was produced. He told the lady that one of the charges against her was that she wore a dagger. "Dear me!" she said, "if I am insane nine-*tenths of the ladies* in Paris are insane too, for they do the same!" He took

the dagger to a shop, and inquired into the matter. He was told that they had sold 70 of the same sort within a few days; that wearing them had become a fashion in Paris, and was becoming the fashion in England. Yet a person calling himself a "mad doctor" said the lady must be insane, because she wore a dagger! That a medical man should be allowed to be in Court, hear all the evidence, and on that come to a conclusion himself, he thought was a vicious practice. A great deal that was said was not evidence at all, but it was likely to produce a very serious effect on the Master, the Jury, or the Judge. It was a wrong method. Could anything be more remarkable than the discord that existed among all these doctors on the subject of insanity? They did not agree among themselves—they were perpetually at variance with each other, and they would find the strongest, most discordant, and dangerous opinions given by medical men.'

This is a most illiberal view of medical testimony, and an unjust depreciation of its value in cases of alleged lunacy. Medical opinions, like legal opinions, are sometimes hastily formed from imperfect data, but this is no imputation on the general good faith of the members of the two professions. As long as men's minds are not constituted alike, they are not likely to agree in their conclusions, even with the same elements before them. The learned judges of our different Courts frequently differ *toto cœlo* in their judgments, and thus cause much anxious, costly and protracted litigation in reference to patents, nuisances, legitimacy, and other contested questions. Six will take one view and five another, and the question is then decided by the rough test of a majority of *one*. The Earl of Shaftesbury condemns 'doctors' for not agreeing among themselves on the subject of insanity, and suggests that persons of common sense and a practical knowledge of the world are more qualified to judge of soundness and unsoundness than medical men. He forgets however that in the *Windham* case, which elicited his censures, the jury, consisting of twenty-three men with a 'practical knowledge of the world' differed from each other even more than the doctors—the numbers being fifteen in favour of a verdict of soundness and eight in favour of unsoundness of mind. The minority felt so strongly on the error of the verdict of the majority, that they specially signified their dissent from it to the Lords Justices who had directed the inquiry. This great legal question was therefore simply decided arithmetically by relative numbers, 15 to 8, as in the election of a Member of Parliament!

The chief objections to the evidence of medical experts on those occasions would be removed if they were all nominated by the Lord Chancellor or the Lords Justices, and if they were not permitted to be retained by solicitors on opposite sides of the Commission. So strong was the feeling in reference to medical evidence after this inquiry, that the Lord Chancellor actually proposed to exclude it altogether, except in so far as it was based on *facts* within the personal knowledge of the witness. It was suggested that the general scientific conclusions of experts should *not* be received as evidence. This proposition, which would have been most injurious to the interests of the insane as well as the sane, did not meet with a favourable reception.

Commissions may be superseded, but the evidence must then be as strongly in favour of sanity as it was before in favour of insanity. In *Dyce Sombre's* case (July 1844) the physicians of England and France came to directly opposite conclusions, and English physicians were equally arrayed against each other! (See the judgment of the Lord Chancellor, as reported in the 'Law Times,' Sept. 28, 1844; also a notice of a treatise on his own case and the law of Lunacy, by Mr. Dyce Sombre, in the 'Journ. of Psychol. Med.' 1850, p. 409.) There have been few cases in which so great a difference of opinion has existed among medical witnesses as in this. Five English medical practitioners of good standing were, however, in favour of the sanity of this gentle-

man. The decision was against superseding the Commission, chiefly on the ground of the continued existence of delusion; but the most extraordinary part of the case was that the alleged lunatic was allowed to have the uncontrolled use of a large portion of his property! ('Med. Gaz.' vol. 40, p. 893.) In 1851 arrangements were made for an independent Medical Commission to inquire into the mental state of this gentleman, and, if possible, to reconcile the conflicting medical opinions already given; but before this was constituted, the alleged lunatic died. (For some remarks on this case, see a letter by Dr. Mayo, 'Med. Gaz.' vol. 46, p. 123; also 'Medical Testimony,' p. 31.) It has been suggested by Dr. Chevers that many of the acts which were considered to indicate insanity in this case might be traced to Oriental habits and prejudices. ('Med. Jur. for India,' p. 574.)

The great caution shown in superseding commissions will be evident from the following case. In *Re Blackmore* (December 1862) a petition for a *supersedeas* of a Commission of Lunacy was presented to the Lords Justices, and was supported by the evidence of Dr. Sutherland and Dr. Forbes Winslow. Lord Justice Turner observed:—'There is no more painful duty in reference to lunatics than to decide whether persons against whom a Commission has been issued are so far recovered as to justify the superseding of the Commission. It may be that the recovery is apparently perfect so long as the restraint is continued, but the moment the restraint is removed the disease reappears. It must be a subject of anxious consideration whether the recovery will continue when the restraint is removed. Notwithstanding the implicit confidence which the Court places in the medical reports produced and the favourable impression conveyed by the personal interviews which the Commissioner has had with the petitioner, the Court feels that they ought not to go so far as to supersede the Commission, but that it is their duty to see what will be the effect of removing the restraint, and whether the removal of it will be attended with a recurrence of the disease. This course is one which is borne out by both reason and authority. The authorities in favour of it are the judgments of Lord King in *Lord Ferrer's* case, in 1730; Lord Hardwicke, in *Sir William Brooke's* case, in 1737; Lord Loughborough, in *Errington's* case, in 1798; Lord Eldon, in *Stock's* case, in 1813; and Lords Lyndhurst and Cottenham, in *Dyce Sombre's* case, in 1844 and 1847. After much reflection on the subject I have come to the conclusion, in accordance with these authorities, that the Court ought not to supersede the Commission, but to make an order to suspend all proceedings under it until further order, and that Mr. Blackmore be at liberty to apply for further relief upon his petition to the Lord Chancellor or the Lords Justices in Trinity Term next, and that he should have the management of his business and estate without the control or interference of the Committee of his person, with liberty to apply in the meantime.'

CHAPTER 96.

RESPONSIBILITY IN CIVIL CASES—INSANITY AS AN IMPEDIMENT TO MARRIAGE—DEEDS AND CONTRACTS—WILLS MADE BY THE INSANE—TESTAMENTARY CAPACITY—TEST OF CAPACITY—DELUSION IN THE DEED—ECCENTRICITY IN WILLS—WILLS IN SENILE DEMENTIA—WILLS IN EXTREMIS—RESTRICTION OF MEDICAL OPINIONS.

Insanity as an impediment to marriage.—Insanity is deemed in law to be a civil impediment to marriage, because it is considered that there cannot be that rational consent which is necessary to the validity of a contract. The marriage

of a lunatic is therefore called a nullity, and is void *ab initio*. All that the law requires is that there should be good proof of insanity at or about the time of the contract. If this be offered, and it be alleged that the contract was entered into during a lucid interval, then the person who would benefit by the allegation must prove its existence. The suitableness of the marriage, as well as the conduct of the party during or after its performance, will also be considered by the Court. In *Turner* v. *Myers*, a lunatic who had recovered from his lunacy instituted a suit to set aside a marriage which he had voluntarily contracted while in this state! The marriage was declared void. ('Med. Gaz.' vol. 8, p. 481.) The case of *Baldry* v. *Ellis* (Norwich Summer Ass. 1851) will be found of interest in relation to the matrimonial engagements of alleged lunatics.

In *Reed* v. *Legard* (Court of Exchequer, May 30, 1851), a question arose whether a lunatic was responsible for necessaries supplied to his wife. The articles supplied were for the sole use of the wife, the husband being a confirmed lunatic and the inmate of an asylum. The Court held that the fact of a husband being from the visitation of God unable to manage his affairs did not absolve him from the obligation, which he contracted when he married, to provide necessaries for the support of his wife. He was then of sane mind, and although he had subsequently become insane, that obligation was not revocable under the circumstances. (See also a report of the case of *Seaton* v. *Adcock*, 'Journ. Psychol. Med.' 1851, p. 297.)

The validity of *civil contracts* entered into by lunatics will depend mainly on the circumstances which accompany the act. If there be nothing unreasonable in the conduct of the lunatic, and the party with whom he contracts has no knowledge or suspicion of his insanity, then the contract will be binding on the lunatic and his representatives. It was so held in *Monckton* v. *Cameroux* (Exchequer, June 1848). This was an action by the administrator of a deceased person to recover from the defendant, as secretary of an Insurance Office, the sum paid by him as the consideration for two annuities, the foundation of the action being, that at the time of the arrangement in question the deceased was not in a sound state of mind. At the trial before the Chief Baron, it appeared that the negotiation had been conducted by the deceased with apparent prudence, sanity, and judgment, and that the arrangement entered into by him with the Office was just such as any prudent person would have been expected to make with a view to his own interest. The deceased, who died very soon after the business had been arranged, was, both before and after the transaction in an unsound state of mind. Under these circumstances, this action was brought by his representatives, and a verdict recovered by them, subject to the opinion of the Court on their right to recover as on the entire failure of consideration. The Chief Baron, in giving judgment in favour of the defendant, said it was sufficient for the purpose of this case to lay it down as a general rule, that when a person of apparently sound intellect enters into a contract, such as any ordinary person would enter into with others who act *bonâ fide*, and the parties cannot be restored to their former condition, it is no ground for setting aside the contract that one of them was at the time *non compos mentis*. On appeal to the Exchequer Chamber in May 1849, this judgment was affirmed. (See also the case of *Staniland* v. *Willett*, Vice-Chancellor's Court, Nov. 1848.) In the case of *Donat* v. *Haniquet* (Guildhall Sittings 1854), on an action to recover a sum of money, in which the defence was that the defendant was of unsound mind at the time of the contract, Crompton, J., held that unless it was shown that the plaintiff had taken advantage of defendant's unsoundness of mind, he would be entitled to recover the amount claimed.

Wills made by the insane. Testamentary capacity.—Questions involving

the testamentary capacity of persons are of very frequent occurrence, and medical evidence is commonly required for their solution. When property is bequeathed by the testator out of the usual order of succession, it may be alleged by the relatives that he was wholly incompetent to understand the nature of the deed—either from actual insanity, the imbecility of age, or that natural failing of the mind which is so often observed to occur from disease or on the approach of death. A disposing mind is what the law requires to render a will valid. The best test of capacity for this act is that a man at the time of signing the will should know the nature and amount of his property and the just claims of those who are nearly related to him. It has been truly said that the evidence of the medical attendant on this point at the time of the execution of the will, is worth more than the opinions of experts or of witnesses who may have seen the testator at other times and under other circumstances. ('Med. Times and Gaz.' 1871, 2, 203.) Another writer has remarked that the capacity for making a will does not rest upon the question of sanity or insanity, but rather upon the proof of competency or incompetency in the testator.

A medical man is frequently of necessity a witness to a will. He should remember that when he signs his name to it as a witness, he is practically testifying to the competency of the testator to make the will.

Bodily disease or incapacity does not affect the validity of a will, unless the mind be directly or indirectly disturbed by it. In a case which occurred some years since in France, a will was contested on the ground that the testator when he executed it, was labouring under *hemiplegia*. The opinion of Esquirol was required, and he said that hemiplegia might undoubtedly affect the brain—a fact clearly indicated by the sight, hearing, and other senses becoming weakened; yet this, in his opinion, did not necessarily indicate an impairment of the intellectual powers. ('Ann. d'Hyg.' 1832, 1, 203.) A man's mind, under these circumstances, may not be so strong as in robust health, but still it may retain a disposing power. In *Harwood* v. *Baker*, decided by the Privy Council in 1841, a will was pronounced to be invalid owing to the general state of bodily disease in which the testator was at the time of making it. It appears that he was labouring under erysipelas and fever, and these diseases had produced a degree of drowsiness and stupor, which rendered him incompetent to the act. In the case of *Day* (June 1838), epilepsy was alleged to have affected the mind; and in the case of *Blewitt* (March 1833), paralysis was adduced as a ground of incompetency. In all cases of this kind, the law looks exclusively to the actual *effect* of the bodily disease upon the *mind*; and this is commonly a question to be determined by the jury from the testimony of those who have attended the deceased, as well as from the evidence of medical experts.

In the case of *Penfold* v. *Crawford* (C. P. Dec. 1843), it was shown that the testator had lost his speech from an attack of apoplexy; but it was proved by medical evidence that his mental powers, notwithstanding this attack, were good, and therefore a deed made subsequently was held to be valid. In the case of *Whyddon* v. *Billinghurst* (Prerog. Court, July 1850), a will was set aside because it was executed by the testatrix while labouring under an attack of cholera, in Sept. 1849, and proper means had not been taken to test the capacity of the deceased, who at the time of its execution was reduced to such an extreme state of weakness that her mental powers were affected. In *Maxwell* v. *Maxwell* (Probate Court, July 1872), the validity of a will was contested on the ground that the testator was at the time labouring under gastric fever. It was attested by the medical attendant and the solicitor, both of whom deposed to the competency of the testator, *i.e.* that the disease had not

reached that point to affect the brain or disturb the mind. In all cases of this nature *integritas mentis non corporis sanitas exigenda est.*

The case of the *Duchess of Manchester* (*The Duke of Manchester* v. *Bennett*, Kingston Lent Assizes, 1854) is of importance in relation to testamentary capacity. The Duchess had made a will, which was disputed on the ground that, from bodily illness and mental infirmity, she was not at the time competent to dispose of her property. In 1843, she had made a will bequeathing her property to her children; in 1848 she made another will revoking that of 1843, and bequeathing the absolute control of her property to her husband the Duke. This second will, which was executed on or about the 26th October 1848, was the subject of dispute. It appeared from the evidence that the Duchess had been seized with hysteria and strong convulsions on the 12th of September preceding, but her mind was not then affected. On the 1st of October she was again attacked with convulsions, and according to some of the witnesses, she laboured under acute mania with symptoms of inflammation of the brain. She died on the 21st November, about three weeks after the execution of the will; and there was evidence to show that she had had some delusions both before and after its execution. A physician who was the medical attendant of the family, and who was one of the witnesses to the will, deposed that on the day it was signed, and for some days previously, the Duchess had recovered her reason, and that at the time of signing it she was, in his judgment, aware of what she was doing, and that she voluntarily delivered it as her own act and deed. It appeared also that the disputed will was substantially such as the Duchess had announced her intention to make long before the execution of it, and when it was not suggested that she was in an unsound or incompetent state of mind. Three medical men of eminence were called on the part of the defendants; and they expressed their opinions, from the evidence, that the deceased at the time of making the will was incompetent to make it: that, in fact, she was proved to have been insane, and there was no medical evidence that she had had a lucid interval. These opinions were based on the nature of the illness, its duration, and the probability (for there was a want of any direct evidence on this point, except that which showed the Duchess to be in a sane and disposing state of mind) that this illness still affected her mind when she executed the will. The point at issue then was —Was she, or was she not, in a competent state of mind at the time of executing the will? The jury found that she was competent, and that the will was valid, but a new trial was subsequently granted by the Vice-Chancellor: this did not take place, as the case was ultimately arranged without it.

It is to be regretted that the rule given at pp. 550, 558 for testing the capacity of the testatrix was not adopted by the medical attendant before he attested the will of the Duchess. Had he applied this rule, there can be no doubt that the whole of the painful litigation which followed would have been avoided. Nevertheless, the evidence for the plaintiff, assuming the statements of the medical gentlemen who saw and attended the Duchess to have been correct, appeared to show that when the will was executed she had a disposing capacity.

The great point at issue in the case was purely of a medical nature: namely, whether the delusions or wanderings under which the Duchess laboured during her illness were the rooted delusions of *insanity*—fixed mental derangement (mania), or only the temporary delusions of *delirium*, the result of the disease under which she was labouring. In granting a new trial, the Vice-Chancellor very properly stated that, in reference to permanent proper insanity, there was great difficulty in proving a lucid interval. A patient so affected is not unfrequently rational to all outward appearance, without any real abatement of the malady; so that, in truth and substance, he is just as insane in

his apparently rational as in his visible raving fits. But the apparently rational intervals of persons merely delirious are for the most part really such. Delirium is a fluctuating state of mind created by temporary excitement, in the absence of which, to be ascertained by appearance and conduct, the patient is most commonly really sane. Further, in cases of permanent or fixed *insanity*, the burden of proof lies on the person setting up the instrument; the presence or absence of delusions ought to be tested at the time; and it should be shown by indisputable evidence that on the subject in question delusion is absent from the mind. If the delusions arose from *delirium*, the onus of proof would not be on the party setting up the instrument but on those who oppose it.

There probably never was a case in which the necessity of drawing a clear distinction between *mania* in its acute form and *delirium* dependent on disease, was more strongly manifested than in this. The medical facts for the basis of an opinion were really few and simple, and they appear to me to lead to only one conclusion,—*i.e.* that the occasional wanderings or delusions of the Duchess were the results of delirium from bodily disease, and not of permanent insanity,—that this state is quite compatible with the existence of intervals of perfect competency,—and that the conduct of the Duchess, at the time of executing her will, was such as to show that she had a full knowledge of the nature of the act which she was performing. I draw this conclusion from a full examination of authentic notes of evidence taken at the trial.

Test of capacity.—A person is considered to be of a sane and disposing mind who knows the nature of the act which he is performing, and is fully aware of its consequences. From some decisions that have been made, it would appear that a state of mind for which a party might be placed under interdiction or deprived of the management of his affairs would not render him incompetent to the making of a will. The validity of the will of a lunatic was once allowed, although made while he was actually confined in an asylum; because the act was rational, and it was such as the lunatic announced his intention of making, some years prior to the attack of insanity. (*Coghlan's* case; see also *Re Garden*, 'Law Times,' July 6, 1844, p. 258; also the case of *Cartwright*, Mayo on 'Medical Testimony,' p. 44.) In *Nichols* and *Freeman* v. *Binns* (Probate Court, Aug. 1858), the question was whether the will of a Mr. Parkinson, made in a lunatic asylum near Norwich, was executed during a lucid interval. The jury found a verdict in favour of the will. The insanity of a person when not already found insane under a Commission, must not in these cases rest upon presumption, but be established by positive proof. The act of suicide is often hastily assumed to be evidence of insanity; but it would not be allowed as a proof of this state, even when a testator destroyed himself shortly after the execution of his will. A case has been decided where the testator committed suicide three days after having given instructions for his will; but the act was not admitted as a proof or even as a presumption of insanity at the time, and the will was pronounced to be valid. A case has been decided on similar grounds in the French Courts. In *Edwards* v. *Edwards* (Prerog. Court, Feb. 1854) it was proved that the testator had committed suicide three days after the execution of his will, and there was some evidence of eccentric habits almost amounting to insanity; but the will was pronounced to be valid. Suicide is not deemed in law to be a proof of the existence of insanity. (See p. 500.)

Delusion in the will or deed.—The validity of wills executed by persons affected with monomania is often a subject of dispute. The practice of the law indicates that the mere existence of a delusion in the mind of a person does not necessarily vitiate a will, unless the delusion form the groundwork of it, or *unless the* most decisive evidence be given that, at the time of executing it,

the testator's mind was influenced by it. Strong evidence is often derivable from the will itself, especially when a testator has drawn it up of his own accord. In the case of *Barton* (July 1840) the Ecclesiastical Court was chiefly guided in its decision by the nature of the instrument. The testator, it appeared, laboured under the extraordinary delusion that he could dispose of his own property to himself, and make himself his own legatee and executor! This he had accordingly done. The instrument was pronounced to be invalid. But a will may be manifestly unjust to the surviving relatives of a testator, and it may display some of the extraordinary opinions of the individual; yet it will not necessarily be void, unless the testamentary dispositions clearly indicate that they have been formed under the influence of *a delusion*. Some injustice may possibly be done by the rigorous adoption of this principle, since delusion may certainly enter into a man's act, whether civil or criminal, and it may not be always in our power to discover it; but, after all, it is perhaps the most equitable mode of construing the last wishes of the dead. According to Sir John Nichol, it is not necessary in civil suits to connect the morbid imagination with the act itself; if the mind is proved to be unsound, the act is void. In *Roberts* v. *Kerslake* (Warwick Aut. Assizes, 1854), Lord Wensleydale held that to vitiate a will, if it be a case of delirium, the act must be traced to delirious delusion, but if it be a case of lunacy it need not be traced to the delusion. In *Sharpe* v. *Macauley* (Winchester Aut. Ass. 1856), Martin, B., advised the jury, in coming to a conclusion on the question at issue, whether the testator had a 'sound and disposing mind,' to look not to the opinions of others, but to the man's own acts as well as his correspondence. A disposing mind implied that a man understood the nature of his property, the use and benefits arising from it, and had sense and discretion to select persons to enjoy it after his death. A man may have laboured under delusions and have been confined as a lunatic, yet at the date of his will he may have been sane and have had a disposing power. The main question therefore is—Was the testator of sane mind when the will was executed? This may be deduced from direct evidence of his condition as well as from the provisions of the will itself. Sir C. Cresswell held (in *Davey* v. *Comber*, December 1862), that when it was shown that a man had been mad at some period of his life, it was incumbent on those who set up his will to prove that his madness had passed away before it was executed. In holographic wills the handwriting will sometimes furnish strong evidence (*ante*, p. 540). Delusion may be apparent in the mode in which the property is described or distributed. (See 'Ann. d'Hyg.' 1864, 1, 404.)

The will of *Dyce Sombre* (Prerog. Court, Jan. 7, 1856), dated in June 1849, gave rise to a litigation in reference to the alleged insanity of the testator. The deceased was the subject of numerous inquisitions, some of them undertaken at his own request, and the results were variable. On some of these inquiries he was pronounced to be sane and competent to manage his affairs —an opinion entertained also by some English and French physicians. By others, again, it was considered that during the whole period of seven years, his mind was still infected with certain delusions respecting his wife and her relations. Dr. Seymour and Dr. Olliffe, who had been attesting witnesses to some of the testamentary papers, considered him to be of sound mind at the time of signing them. This, however, might be consistent with the existence of some delusion in reference to the disposition of his property. Sir John Dodson, in delivering judgment, said:—'A person might manage his property exceedingly well to a certain extent, and yet be labouring under insane delusions; and any insane delusion whatever operating on his mind would, according to the law and practice of the Court, render him incapable of making a will. But, supposing these gentlemen thought him capable in June and in

August 1849, what was to be said as to the publication of a book by the deceased called the "Refutation," which took place very shortly afterwards, and which must have been in preparation when the will and codicil were executed? It contained statements which showed that the deceased could not have been of sound mind when he composed it. Under these circumstances, the Court could come to no other conclusion than that he laboured under insane delusions in 1843, and that he continued to entertain them when the papers propounded were executed.' The Court therefore pronounced judgment against the will and codicil. In this case the delusions had never been entirely eradicated from the mind of the testator. There is, however, a difference between unsoundness of mind represented by incompetency to manage affairs, and that defect of mind which deprives a man in a legal sense of the power of disposing of his property by will. A mind may be clear enough for the performance of some of its functions, and yet not clear enough for the performance of others. A man may give clear and reasonable directions for the preparation of a will, and even sign it in a natural manner, but he may be governed by caprice and passion amounting to insanity in the disposition of his property. It has been well remarked that 'so long as human nature is the mysterious phenomenon that it is, and the empires of reason and unreason border so closely on each other, we must expect often to err when we try to discover whether a man, alternately the subject of both, was in or out of his mind at any given moment.' A disposing power may exist in the mind of a person not legally competent to manage his affairs. The criteria applied are different, and the existence of such a power must be a matter to be proved by evidence in each particular case.

To simply ask a medical expert on these occasions whether a testator was competent to make a will, is to put a very ambiguous question. A will may be simple or complex, and while there may be capacity for one, there might not be for the other. Dr. Ordonnoux, U.S. (Jurisprudence of Medicine), justly remarks:—'In contesting the probate of any will on the ground of incapacity, the issue is not whether the testator could have made a will in general or any kind of will, but whether he had capacity enough to make the particular will in dispute; and in order to form a proper judgment on this point, a medical expert should hear the instrument read before he gives an opinion.' ('Amer. Jour. Med. Soc.' Jan. 1870, p. 217.)

Eccentricity in wills.—The evidence in these cases sometimes amounts to proof of eccentricity only on the part of the testator, or in the deed itself; but a clear distinction must be here drawn. The will of an eccentric man is such as might always have been expected from him; the will of one labouring under insanity (delusion) is different from that which he would have made in an unaffected state—the instrument is wholly different from what it would once have been. It has been justly observed, that the insane are eccentric in their ideas, their language, or their conduct; but the merely eccentric have but a voluntary resemblance to the insane. (Jamieson's Lectures, 'Med. Gaz.' vol. 46, p. 180.) They can if they please alter their conduct and act like other persons neither eccentric nor insane. In a recent case in the Probate Court, Sir J. Hannen observed that it was impossible to define exactly the distinction between eccentricity and insanity, or to draw the exact line between sanity and insanity, but for practical purposes we are able to say in a particular instance whether a man is sane or insane.

In the case of a *Mr. Stott*, a medical electrician, whose will was disputed by his daughter on the ground of insanity, it was proved that the testator fancied he could deliver pregnant women by means of electricity; and he actually proposed to the wife of a baker living in the neighbourhood, to bring about her accouchement by a number of wires connected with an electrical machine! *The will* was pronounced invalid, not so much on account of this absurdity, as

of the violent and unnatural treatment to which he had subjected his daughter. It appeared that he had taken, as we now and then find in monomaniacs, a most unaccountable and causeless dislike to this girl from her earliest infancy. Strange as it may appear, electricity has been lately used as a means of aiding parturition, but under circumstances very different from those which gave rise to the absurd delusion in the case just related. ('Med. Gaz.' vol. 36, p. 376.) It has become a grave question whether proof of *moral insanity*, *i.e.* a perverted state of the moral feelings, sentiments, or affections, independently of any direct evidence of *intellectual* disturbance, should be a sufficient ground to set aside the act of a testator (*ante*, p. 478.) In the case of *Frere* v. *Peacocke* (Prerogative Court, Oct. 1845), this was the principal question at issue. The counsel who maintained the validity of the will, argued against the admissibility of Pinel's doctrine of moral insanity, chiefly because there was a difference of opinion, among those who adopted the doctrine, whether it was or was not invariably accompanied by some mental derangement. A doctrine thus novel, unsettled, and not sufficiently developed could not, it was urged, be safely applied to legal questions. If a man who was free from delusion (as the deceased in this case was), and capable of acts of business (as he was), might nevertheless be held to have been insane, it would involve this branch of testamentary law in utter confusion. A man who was not a subject for a Commission of Lunacy, might be held after death to have been morally insane. The Court would have to deal with cases of kleptomania and pyromania, in which the persons exhibited no trace of intellectual insanity or delusion of mind. It was safer to rely upon the ancient and general doctrine of these Courts, *that there was no insanity without delusion—its true criterion*—and that in the present case the deceased, though eccentric, was not of unsound mind. The Court found that the will was valid, and that there was no proof of delusion or of insanity, either moral or intellectual. The deceased was a most unamiable being; but still his acts were not irrational, nor inconsistent with soundness of mind. (Prerog. Court, Aug. 1846.) In no case probably has eccentricity come so near to insanity as in this.

Wills are sometimes contested more on the ground of eccentricity than of insane delusion; but if eccentricity only be proved, a Court will not interfere. In the case of *Morgan* v. *Boys* (1838), it was proved that the testator, by his will, had left a large fortune to his housekeeper. The will was disputed on the ground that it bore intrinsic evidence of the deceased not having been in a sane state of mind at the time of making it. After having bequeathed his property to a stranger, the testator directed that his executors should 'cause some parts of his bowels to be converted into fiddle-strings,—and others should be sublimed into smelling-salts, and that the remainder of his body should be vitrified into lenses for optical purposes!' He further added, in a letter attached to his will,—'The world may think this to be done in a spirit of singularity or whim; but I have a moral aversion to funeral pomp, and I wish my body to be converted into purposes useful to mankind.' Sir H. Jenner, in giving judgment, held that insanity was not proved: the facts merely amounted to *eccentricity*, and on this ground he pronounced for the validity of the will. It was proved that the deceased had conducted his affairs with great shrewdness and ability; that he not only did not labour under imbecility, but that he had been always treated during life as a person of indisputable capacity by those with whom he had to deal. The best rule to guide the Court, the Judge remarked, was the conduct of persons towards the deceased, and the acts of his relatives evinced no distrust of his sanity or capacity while he was living. The deceased had always been noted for his eccentric habits, and he had actually consulted a physician upon the possibility of his body being devoted to chemical experiments after death. In the case of *Mudway* v. *Croft*

(Prerog. Court, Aug. 1843), a will contested on the ground of insanity but defended on the plea of eccentricity, Sir H. J. Fust said,—'It is the prolonged departure, without an adequate external cause, from the state of feeling and modes of thinking usual to the individual when in health, that is the true feature of disorder of the mind.' See also the case of *Waring* v. *Waring* (Prerog. Court, Feb. 1847.)

The case of *Yglesias* v. *Dyke* (Prerog. Court, May 1852) presents some singular points of interest in reference to the distinction between eccentricity and insanity. The testatrix bequeathed by her will a considerable amount of property, which, as she was illegitimate, and as it was alleged incompetent to make a will, was claimed by the Crown. It was proved that she was of dirty habits, and among other facts that she kept fourteen dogs of both sexes, which were provided with kennels in her drawing-room! Two of the dogs slept in the same room, and one, which was blind, slept in the same bed with her! The testatrix also had a propensity for guinea-pigs, and was subject to singular delusions. Some evidence was adduced to show that, in spite of these strange freaks, she was able to manage her own affairs; but the Court pronounced against the validity of the will, on the ground that the testatrix had for a long period laboured under insane delusions, and there was no proof that these had ceased. Her eccentricity was the result of insanity. Nothing, however, is more common than to find this propensity for animals existing among sane childless women who live solitary or secluded lives. One old lady whom I knew generally kept her sitting-room full of monkeys, to the great annoyance of her visitors. She was a woman of good family, and of a shrewd and strong mind, well able to look after her affairs and to dispose of her property. She was considered to be eccentric, but there was no trace of insanity about her. Other women are not happy unless surrounded by parrots, or unless their sitting-rooms are converted into aviaries for all kinds of birds. In the case of Mrs. *Cumming*, it was alleged that the lady whose sanity was disputed had a strong propensity for cats; these animals being provided with meals at regular hours, and furnished with plates and napkins. In this case a verdict of insanity was returned, not so much on account of the special attention shown to the cats, as from her acts in reference to her property and from her association with certain persons who appear to have taken advantage of her intellectual weakness. The fact is, this propensity for animals proves nothing in relation to the existence of insanity, unless there is at the same time good evidence of intellectual aberration. (See the case of *Dryden* v. *Fryer*, Q.B. Dec. 1850, 'Journal of Psychol. Med.,' 1851, p. 285.)

To these may be added the following case, which was the subject of litigation in Paris in 1864. A wealthy Portuguese gentleman named *Machado* died in 1861, having made a will with seventy-one codicils attached to it, some of them containing provisions impossible of execution. It was disputed on the ground of the insanity of the testator. One of the codicils was to this effect: 'I leave for the Athenæum of Paris 10,000 francs, the interest of which at 5 per cent. will be 500 francs. Half of this interest to be paid to a Professor of Natural History, who shall lecture on the colours and patterns of dresses, and on the characters of animals.' Again: 'My funeral shall take place at 3 P.M., the hour at which the rooks of the Louvre come home to dinner.' The testator was especially fond of birds: he desired that many stuffed specimens should be placed in his coffin: that his servant should carry to the ceremony 'one of my favourite birds in his cage;' and that certain birds should be let loose on the day of his funeral. The testator had during his life erected his own tomb, on which were engraved a sun, a bird, an ox, and a dog, an egg 'proper' surmounting them; beneath was inscribed, 'Here reposes the author of the "Theory of Likeness."' These and other facts of a

similar kind were relied upon as proofs of insanity, but it was decided that the deceased was only vain, not insane, and therefore he had a right to will away his property as he pleased. It was proved in favour of his sanity that in spite of these crotchets he had while living managed his affairs with all the caution of a sane person.

Within a recent period two cases have come before the Probate Court, in which it has been necessary to draw the line between eccentricity and insanity in reference to wills. Although the facts proved in reference to insanity in the two cases were somewhat similar, the decision was in favour of the will in one case and adverse to it in the other. In both there was a departure from the rule which has hitherto influenced justly the verdicts of juries, *i.e.* in the ignoring of the fact that the testator in each case had managed his affairs during life without any imputation on his sanity or competency, or any interference in his affairs on the part of relatives. In *Davis* v. *Gregory* (Probate Court, Jan. 1873), the question was whether one Thomas Holme, when he made his will in April 1870, was of sound mind. It was proved that during a long life he had conducted his affairs with prudence,—had always been treated as sane by his relatives and those who knew him; and, although his capacity was of a low character, there was nothing to indicate actual insanity in his correspondence. In addition to the alleged existence of delusions, there was another indication of unsoundness of mind—namely, perversion of the natural affections, and a complete change of character and habits. In spite of these facts, which pointed strongly towards unsoundness of mind and a want of capacity, the Court pronounced judgment in favour of the will. In the second case, *Boughton* v. *Knight* (Probate Court, 1873), the will was contested by the sons of the testator on the ground of mental incapacity. It was admitted that the testator was a reserved man and shunned society. He had for some years lived alone, and was peculiar and eccentric in his habits. He was fond of listening to German bands and seeing his servants dance, and he fed rats and shot rooks in company with a female servant. He was of a capricious and suspicious disposition, and had a delusion that he had perpetrated crimes, and that people were watching him. On the other hand, he had managed his own affairs without any imputation on his sanity, and his correspondence showed that he was rational and had complete capacity for conducting business. Sir J. Hannen, in his charge to the jury, said that 'whatever degree of mental soundness might be required for other acts—for responsibility for crime, for capacity to marry, for capacity to contract, for capacity to give evidence—he had no hesitation in telling them that the highest degree of all was required in order to constitute capacity to make a testamentary disposition.' He quoted from a judgment of the Lord Chief Justice in another case the following extract, which appears to embrace in a small compass the legal conditions required to render the will of an eccentric man valid. 'It is essential to the exercise of such a power (to make a will) that a testator shall understand the nature of the act and its effects; shall understand the extent of the property of which he is disposing; shall be able to comprehend and appreciate the claims to which he ought to give effect; and, with a view to the latter object, that no disorder of the mind shall poison his affections, pervert his sense of right, or prevent the exercise of his natural faculties; that no insane delusion shall influence his will in disposing of his property and bring about a disposal of it which, if the mind had been sound, would not have been made.' (See the case of *Goodfellow*, 'Med. Times and Gaz.' 1870, 2, 343, and 1871, p. 203.) The jury found that the deceased was not of sound mind when the will was executed.

On these occasions the will is more or less unjust to relatives or those who have a direct claim on the testator. It is easy in such suits to magnify acts

of eccentricity into proofs of insanity: and to arrive at the inference that the provisions of the will were influenced by an insane delusion, and did not express the real mind of the testator. Thus a condition of mind which will lead to no interference with the acts of a man during life, may form a subject of costly litigation after his death. It was an admitted fact that the testator in this case had capacity to manage his property, but it was held that he had not sufficient capacity to dispose of that property by will. It must be remembered in reference to these cases that persons who have been eccentric through their lives, and have voluntarily set at defiance all the customary rules which govern the conduct of men in a normal state, are not likely to make any other than eccentric wills, which may however be the real expression of their minds.

It is difficult to suggest in what manner medical evidence can be brought to bear on cases of eccentricity, involving the question of testamentary capacity. A medical expert may give an opinion whether the acts of the eccentric testator furnish proof of the existence of delusion. He may also be able to say in looking to the previous habits and mode of life of the testator, whether at or before the making of the will there has been any change of habits or character which would indicate insanity—the existence of a causeless hatred to members of the family not mentioned in the will, and a suspicion and distrust of all around him. In reference to cruelty to children, unnatural conduct to a wife, the keeping and feeding of birds, dogs, cats, rats, or monkeys, these are points which can be as well considered in relation to testamentary capacity by a jury of educated men, as by experts in insanity.

Wills in senile dementia.—Wills made in incipient dementia arising from extreme age (senile imbecility) are sometimes disputed, either on the ground of mental deficiency, or from the testator, owing to weakness of mind, having been subjected to control and influence on the part of interested persons. If a medical man is present when a will is executed, he may easily satisfy himself of the state of mind of a testator, by requiring him to repeat from memory the mode in which he has disposed of the bulk of his property. A medical man has sometimes placed himself in a serious position by becoming a witness to a will without first assuring himself of the actual mental condition of the testator (case of the *Duchess of Manchester*, p. 551). It would always be a good ground of justification, if, at the request of the witness, the testator had been made to repeat substantially the leading provisions of his will from memory. If a dying or sick person cannot do this without prompting or suggestion, there is reason to believe that he has not a sane and disposing mind. It has been observed on some occasions, when the mind has been weakened by disease or infirmity from age, that it has suddenly cleared up before death, and the person has unexpectedly shown a disposing capacity. ('Ann. d'Hyg.' 1831, p. 360.) In *Durnell* v. *Corfield* (Prerog. Court, July 1844), where an old man of weakened capacity had made a will in favour of his medical attendant, Dr. Lushington held that there must be the clearest proof not only of the *factum* of the instrument, but of the testator's knowledge of its contents. ('Law Times,' July 27, 1844.) In *West* v. *Sylvester* (Nov. 1864) Sir J. Wilde, in pronouncing judgment against a will propounded as that of the deceased, an aged lady, said:—'At the time she executed the will of October 1863, although for many purposes she might be said to be in her right senses, she was nevertheless suffering from that failure and decrepitude of memory which prevented her from having present to her mind, the proper objects of her bounty, and selecting those whom she wished to partake of it.'

I am indebted to a learned judge for the following note:—'Another condition may be noticed, which often occurs in the experience of lawyers, and to which medical gentlemen in attendance on aged persons do not sufficiently *attend*. A person's mind in extreme old age may be quite intelligent, his un-

derstanding of business clear, his competency to converse upon and transact such, undoubted, and his bodily strength good; but there may grow upon him such a fear and dread of relatives or servants who may have surrounded him, and on whom he may have become perfectly dependent, that his nervous system is wholly overcome, and he becomes a mere child and tool in the hands of those about him, so that he has no power to exert his mind in opposition to their wishes, or to resist their importunities. His mind is enslaved by his fears and a feeling of helplessness, so that to that extent, and in matters in which he may be moved by them, he really is facile and imbecile. This state of things seems to be easily brought on in old age, when the faculties are otherwise entire and the bodily strength considerable. This condition of mind at a great age (93 or 94) was exhibited in a remarkable manner in a case from Scotland, which went to the House of Lords (*Cairns* v. *Marienski*).

Wills 'in extremis.'—Wills made by persons whose capacity during life has never been doubted, while lying at the point of death, or, as it is termed, *in extremis*, are justly regarded with suspicion, and may be set aside according to the medical circumstances proved. Many diseases, especially those which affect the brain or nervous system directly or indirectly, are likely to produce a dulness or confusion of intellect, under which a disposing power is lost. Delirium sometimes precedes death, in which case a will executed by a dying person would be at once pronounced invalid. In *Winstone* v. *Owen* (Court of Probate, Nov. 4, 1871), the testator, Winstone, made his will when on his death-bed. His medical attendant, Dr. Baker, took his instructions, and shortly after a solicitor drew up the will from them. The medical attendants and the solicitor attested the will, but it was alleged that although conscious when instructions were given, the testator was unconscious when the will was executed. The solicitor thought he was quite unconscious at the time of execution. The doctor and the nurse thought he was conscious. Lord Penzance said the law required not only that a man should be conscious, but that he should have a sound and disposing mind. The party propounding the will was bound to establish this, and having failed to do so, he must pronounce against it. ('Med. Times and Gaz.' 1871, 2, 605.) It would appear from the evidence in this case that the will was signed within *ten minutes* of the time at which the testator was known to have lost his consciousness. His property was bequeathed to the defendant—a stranger. The deceased at the time of signing the will said nothing, did no act, and made no movement to indicate that he was distinctly aware of what he was doing.

An interesting report of a will made *in extremis*, in favour of the physician in attendance, is reported by M. Claudé ('Ann. d'Hyg.' 1867, 2, 137.) On these occasions, when the medical attendant takes a direct benefit under the will of the dying person, the Court looks very closely to all the circumstances connected with the drawing up and signing of the will. A medical man who takes any active part under these circumstances justly lays himself open to censure, and at the same time the will will most probably be set aside on the ground of undue influence.

In *Munro* v. *Lawson* (Probate Court, Jan. 1870), plaintiff, who was a relation of the husband, propounded the will of a lady, æt. 76. He took her instructions, and the will was drawn up in his own favour. It was proved by the medical man that testatrix had died from apoplexy, that she was at the time of signing the will exhausted by illness and the near approach of death, and at the date of signing it was incompetent. Lord Penzance said the result of the testimony was that on the day of the execution of the will the deceased retained in some measure her consciousness, but it was very doubtful whether she had sufficient capacity to make a good will. The will in question was made by the person who was benefited by it; no one else was present when

the instructions for it were given, and he did not even take the precaution of reading it over in the presence of the witnesses. Even if she had been in full possession of her faculties at the time, the Court must have felt some doubt whether she was fully aware of the contents of the will when she signed it. But it was evident that she was in a state of great physical prostration, and her capacity was very doubtful. The plaintiff had failed to satisfy the Court that the deceased knew and approved the contents of the will, and the Court therefore pronounced against it, and condemned the plaintiff in costs.

In examining the capacity of a person under these circumstances, we should avoid putting leading questions, namely, those which suggest the answers 'yes' or 'no.' Thus, a dying man may hear a document read over, and affirm, in answer to such a question, that it is in accordance with his wishes, but without understanding its purport. This is not satisfactory evidence of his having a disposing mind: we should see that he is able to dictate the provisions of the document, and to repeat them substantially from memory when required. If he can do this accurately, there can be no doubt of his possessing complete testamentary capacity. But it may be objected that many dying men cannot be supposed capable of such an exertion of memory; the answer is then very simple: it is better that the person should die without a will, and his property be distributed according to the law of intestacy, than that, through any failing of the mind, he should unknowingly cut off the rights of those who have the strongest claims upon him.

Restriction of medical opinions.—In an important case (*Bainbrigge* v. *Bainbrigge*, Oxford Summer Ass. 1850), tried before Lord Campbell, in which the testamentary capacity of the testator was disputed, it was held that a medical witness, although conversant with cases of insanity, cannot be asked his opinion as to the insanity of a testator founded upon the evidence given at the trial in his hearing. (4 Cox, Criminal Cases, 454; see also on this subject 'Med. Gaz.' vol. 46, p. 240.) In the case of the *Duchess of Manchester*, however (*ante*, p. 551), the opinions of Drs. Sutherland, Mayo, and Conolly, on the competency of the testatrix, were received by the Court, although based upon the evidence given at the trial.

CHAPTER 97.

THE PLEA OR DEFENCE OF INSANITY IN CRIMINAL CASES—CIRCUMSTANCES UNDER WHICH IT IS ADMISSIBLE—HOMICIDAL MONOMANIA—MORAL INSANITY—HOMICIDAL MANIA—CAUSES—SYMPTOMS—LEGAL TESTS—MEDICAL TESTS—MOTIVE FOR CRIME—CONFESSION—ACCOMPLICES—DELUSION—SUMMARY.

The plea or defence of insanity.—Responsibility here signifies nothing more than liability to punishment for crime, and a criminal act implies the existence of intention, will, and malice. (Stephen.) When insanity has reached a certain stage or degree, an act may be perpetrated without malice; and in this sense the person is considered to be irresponsible in law. This is a question of *fact*, to be determined by a jury from the whole evidence set before them; and the proof rests with those who make the allegation that the act in question, whether murder or arson, was not done wilfully and maliciously. 'The sanity of a man's conduct,' observes Mr. Stephen, 'involves the presence of intention and will on all ordinary occasions; and if the act is one of those which the law forbids, it is presumed to be malicious and wicked.' ('Criminal Law of England,' p. 89.) This subject is of considerable importance in a medico-legal view; for should a plea of insanity be improperly admitted in any cri-

minal case, then punishment is made to fall unequally on offenders; and if, on the other hand, it be improperly rejected, punishment is administered with undue severity. The rule of law on this subject is that no man is responsible like a sane person for any act committed by him while in a state of insanity. The plea may be raised for the smallest offence up to the highest crime—murder; but it is rarely made a defence in smaller offences, because the close confinement to which an accused person, if found insane, would necessarily be subjected, would often be a heavier punishment than that which the law actually prescribes for the offence which he may have committed. In a case of felonious assault, it was urged by counsel in defence that the prisoner was insane; but the evidence on this point was not by any means conclusive, when it was intimated by the Court that, if this plea were admitted, the party would probably undergo a much longer imprisonment than if on conviction he received the legal punishment for the offence! (*Reg.* v. *Reynolds*, Bodmin Aut. Ass. 1843.) The judge is reported to have said that there was no proof of insanity. If the prisoner was pronounced insane, he might be imprisoned for life, and therefore he did not think *that* finding would benefit him! A verdict of guilty was returned, and the man was sentenced to eighteen months' imprisonment. This case shows that a defence of this kind may be sometimes indiscreetly put forward. Such a mode of dealing with the plea of insanity, *i.e.* of making it a question of expediency dependent on the amount of punishment for the offence, must be pronounced as unsafe and indefensible. Murder, incendiarism, and theft are the crimes for which the plea of insanity is commonly raised; and it has been generally confined in this country to those cases in which persons have been charged with murder or attempts at murder.

Murder may be perpetrated by one who is obviously labouring under delirium or violent mania, or by an idiot or imbecile. Apart from the circumstances connected with the criminal act, there may be evidence of such a disordered state of mind in the person as at once to exonerate him from that amount of responsibility which is exacted from one who is sane. The appearance of the accused or the testimony of a medical man, renders it unnecessary to go into the evidence and a verdict is returned accordingly. The cases of difficulty are those in which insanity presents itself in a doubtful aspect, as in mania or imbecility. The mental disorder may be of so slight a nature as not legally to justify an acquittal for murder. In order to exculpate a person it must be proved that insanity in a certain degree existed at the time of the perpetration of the act. Whether the prisoner is or is not insane when placed on his trial, is immaterial in reference to the question of his responsibility. In the case of *Murray* (tried before the High Court of Justiciary, Edinburgh, Nov. 1858), it was proved that the accused recovered his sanity eight hours after he had killed the deceased; but he was acquitted on the ground of insanity at the time of committing the act.

In *Reg.* v. *Pate* (tried in 1850, at the Central Criminal Court) the prisoner was indicted for an assault on the Queen. It was proved that he had been guilty of strange and eccentric, and even of that which some might call insane, conduct; but there was no evidence to show that he had not a rational control over his actions. Dr. Conolly admitted that the prisoner was labouring under no delusion, that he knew the distinction between a right and a wrong action, but he was subject to sudden impulses of passion. He attributed his act to some sudden impulse which he was quite unable to resist. Other witnesses deposed that in their opinion, although the prisoner was fully conscious of his act, he was *insane*. The late Baron Alderson, who tried the case, observed, in charging the jury, 'that it was not because a man was insane that he was unpunishable; and he must say that upon this point there was

generally a very grievous delusion in the minds of medical men. The only insanity which legally excused a man for his acts was that species of delusion which conduced and drove him to commit the act alleged against him. They ought to have proof of a formed disease of the mind, a disease existing before the act was committed, and which made the person accused incapable of knowing, at the time he did the act, that it was a wrong act for him to do.' The jury convicted the prisoner, and he was sentenced to transportation. ('Med. Gaz.' vol. 46, p. 152; and 'Journ. Psychol. Med.' 1850, p. 557.) The defence of insanity was here, it appears to me, advanced upon very weak grounds. Had the prisoner assaulted a policeman instead of the Queen, he would have been fined or imprisoned, and nothing heard of the plea, although the rank of the person assaulted can make no difference respecting the existence or non-existence of a diseased state of mind. (See some remarks on this case by Dr. Forbes Winslow, 'Journ. Psychol. Med.' 1859, p. 445.)

From the remarks of the learned judge it would appear that the existence of one degree of insanity admits of punishment for crime, while the existence of another degree excuses it. As it has been already remarked in speaking of testimonial capacity, nothing can be more incorrect than to apply one general term (*insanity*) to the conditions of all persons affected with mental disorder, and to pronounce them therefore all incompetent or all incapable, when common sense suggests that we are bound to inquire into the amount of capacity in each case. If all persons are to be excused from responsibility for crimes or offences because they entertain certain delusions, or because they are guilty of eccentricity, it would be better at once to make one general rule, and render all their civil acts void, and at the same time give them the benefit of irresponsibility for any criminal acts without inquiring into the *degree* in which insanity exists. Such a practice would hardly be compatible with the due exercise of justice, or with the safety of society. Admitting that in this case the accused was to a certain extent insane, there was a sufficient degree of sanity about him, as indicated by his general conduct before and after the event, to justify conviction and punishment. If, however, according to the ruling of the learned judge, we are always to insist upon distinct proof of a disease of the mind existing *before* the act committed, it is clear that an act perpetrated under a sudden access of insanity, by a person not previously labouring under delusions, would be punishable like that of a sane criminal. Dr. Wood, who has written on this subject, repudiates the doctrine that an insane person is necessarily irresponsible, and therefore unpunishable: 'All who have had the opportunity of studying insanity know full well that, with comparatively few exceptions, insane persons are not only powerfully influenced, but materially controlled, by the same motives which influence and control those who are still mixing in the world, and who have never been suspected of mental derangement.' ('Plea of Insanity,' 1851, p. 4.)

In *Reg.* v. *Burton* (Maidstone Lent Assizes, 1862), Mr. Justice Byles observed that even the existence of mental disease did not necessarily exempt a person from criminal responsibility. Many a man whose mind is in an unsound state knows perfectly well whether he is doing wrong; and so long as he knows *that*, he is subject to the criminal law. A writer on this subject justly remarks:—'Even morbid delusion cannot always be allowed to screen a criminal from the consequences of his own acts, while there are instances in which a plea of insanity may properly be allowed, although no such delusion can be proved. Each case must be taken with its circumstances, and legal theories of insanity are chiefly valuable, not as rigorous axioms of law, but as cautions to be observed by the jury.'

The great difference of opinion which exists between physicians and jurists *in reference to* this plea appears to me to consist in this:—Most jurists aver

that no degree of insanity should exempt from punishment for crime, unless it has reached that point *that the individual is utterly unconscious of the difference between right and wrong at the time of* committing the alleged crime. Physicians, on the other hand, affirm that this is not a proper test of the existence of that degree of insanity which should exempt a man from punishment; that those who are labouring under confirmed insanity, and who have been properly confined in asylums for years, are fully conscious of the difference between right and wrong, and are quite able to appreciate the illegality as well as the consequences of their acts. Again, those who have patiently watched the insane for years, agree that the legal test of utter unconsciousness of right and wrong in the performance of acts would in reality apply only to persons who were suffering from delirium, from a furious paroxysm of mania, or from confirmed idiocy; and that if the rule suggested by Mr. Warren—that a person, in order to be acquitted on the ground of insanity, should be first proved to be as '*unconscious* of his act *as a baby*,'—were strictly carried out, there is scarcely an inmate of an asylum who destroyed a keeper or attendant, who might not be executed for murder. Such a rule amounts to a *reductio ad absurdum*; it would abolish all distinction between the sane and the insane, between the responsible and the irresponsible; and it would consign to the same punishment the confirmed lunatic and the sane criminal. This species of *baby-unconsciousness of action* exists in idiots as well as in furious maniacs, but not in the majority of lunatics; and it may be safely asserted that, if this criterion be the true one, acquittals on the ground of insanity have involved a series of gross mistakes for the last fifty years. The only irresponsible lunatics, according to Mr. Warren, are precisely those who would not even have reason enough to plead to an indictment. Thus, while the medical profession is condemned for adopting opinions which would lead to the acquittal of criminals, this writer recommends a rule which would certainly lead to the execution of the greater number of confirmed lunatics charged with acts of homicide. The practical failure of such a rule is manifest when it is found that persons who have destroyed life with a perfect consciousness of the wrongfulness of their acts are frequently acquitted as insane. In the case of *Dadd*, who was acquitted on the ground of insanity, and who was proved to be a confirmed lunatic, it transpired that the man had actually provided himself with a passport and fled to France after destroying his father! (See Wood on the 'Plea of Insanity,' p. 41.) It may be said that the consciousness of the insane is an insane consciousness, while the law implies the consciousness of a sound mind; but this involves a *petitio principii*. There have been numerous cases of acquittal in which, until the act of homicide was committed, there was no imputation either against the sanity or the sane consciousness of the accused.

Having pointed out these inconsistencies, it is only proper to acknowledge that in theory the English law would punish a lunatic just as it would punish a sane man, provided the lunatic 'had that degree of intellect which enabled him to know and distinguish between right and wrong, or what was lawful and unlawful; if he knew what would be the effects of his crime, and consciously committed it; and, further, if with that consciousness he wilfully and intentionally committed it.' In practice, however, it is placed beyond doubt that some who ought to be convicted under these rules are acquitted on the legal fiction that they were at the time unconscious (or only insanely conscious) of the wrongfulness of their acts. Dr. Wood states that of thirty-three males confined as lunatics in Bethlehem who had committed murder, and had been tried and acquitted on the ground of insanity, *three* were reported sane; and he was quite satisfied that two of these were *not insane* at the time they committed the murders. Of fifteen males who had attempted to commit murder,

five were reported sane, and two of them in his judgment ought not to have been acquitted on the ground of insanity. ('Plea of Insanity,' p. 50.) According to Dr. Hood, in the six years from 1852 to 1858, 120 persons who were tried for murder, or for attempt at murder or acts of personal violence, were acquitted on the ground of insanity. Of that number, 79 were received into Bethlehem Hospital, and in several instances they exhibited no symptoms of insanity while they were resident in the asylum. These facts, then, are sufficient to show that the rule of law generally adopted does not err on the side of severity. The only complaint that can be made is, that it operates with uncertainty. This question has been fully and ably examined by Dr. Bucknill. ('Unsoundness of Mind in Relation to Criminal Acts,' 1854, pp. 5, 16, 39.)

The defence of insanity in cases of murder by poison has generally ended in failure, although there may even have been proof of hereditary taint. (*Reg.* v. *Gallop*, Somerset Winter Assizes, 1844; and *Reg.* v. *Allnutt*, Cent. Crim. Court, Dec. 1847.) The crime of poisoning indicates malice and deliberation in a greater degree than it would be in general safe to admit as co-existing with a state of irresponsible insanity. Alison, however, mentions one case of acquittal (*Sparrow*, 1829) in which this plea was admitted. The woman poured a large quantity of vitriolic acid down the throat of her own child; she then ran to a neighbour's house in a state of evident derangement, saying that she had killed the devil. This was a case of demonomania; her insanity was clearly proved, and she was acquitted. ('Crim. Law, p. 648.) In *Reg.* v. *Vyse* (Cent. Crim. Court, July 1862) the prisoner, a respectable woman, was charged with the murder of her two children, by poisoning them with strychnia. The act was done with great deliberation and forethought, the poison was purchased under false pretences, and there was an entire absence of motive. She was acquitted on the ground of insanity. This was considered to be a case of impulsive mania, as there was nothing to indicate intellectual insanity. There was an hereditary tendency to insanity, coupled with the effects of prolonged nursing and general constitutional debility; but Dr. Hood's minute inquiries brought out facts which clearly showed that the prisoner had laboured under disease which might have affected her mind and have deprived her of the proper control of her actions. He states that on his first visit to her in Newgate he learnt that during the latter months of suckling she had been mentally overworked and subjected to great anxiety and fatigue. When worried by her business-transactions she suffered from a painful sensation seated in the interior of the cranium, on the surface of the brain, and which she spoke of as 'perspiring of the brain'—a symptom often complained of by patients who suffer from mental disease as giving a creeping, irritating feeling, but never more graphically described than by Mrs. Vyse. It is indicative of morbid action or secretion of the membranes of the brain, which is manifested by examination after death. He considered Mrs. Vyse to be suffering from cerebral disease, which rendered her at the time of the murders an irresponsible agent.

The impulse to violence may be dormant for weeks or months, and then show itself by a suicidal or homicidal act; but such is the result and not the proof of mental disease. The case of *Christiana Edmunds* (*Reg.* v. *Edmunds*, C. C. C. Jan. 1872) is in this respect of some interest. The woman, æt. 43, moving in a respectable sphere of society, was charged with the murder of a boy at Brighton, on the 12th June, 1871. The deceased ate some sweets purchased in a confectioner's shop, and died in a short time with all the symptoms of poisoning with strychnia, and strychnia was found in his stomach. The prisoner had procured sweets from this shop by the agency of little boys —had deliberately poisoned them with strychnia and returned them to the shop. She had herself on various occasions left poisoned sweets about in shops. How

many persons had suffered from this cold-blooded and reckless act is not known, but she had previously attempted to poison the wife of a medical man, and imputed the poisonings to the carelessness of the confectioner. He was able to show that his sweets as purchased were wholesome, and by a chain of circumstances the crime of poisoning them was clearly fixed upon the prisoner. She had shown much cunning in her proceedings. She had procured a large quantity of strychnia on four different occasions under false pretences, and had borrowed the poison-book of a druggist, and torn out the leaves to conceal the fact that she had purchased the poison.

The defence was insanity, but there was no proof of intellectual insanity about her. She had shown all the skill of an accomplished criminal in carrying out her plan of general poisoning, and in using the most artful means to conceal it and to throw the imputation upon the confectioner. Impulse could hardly be pleaded, for her criminal acts were extended over weeks and months. The jury convicted her of the crime. She then, with a view of averting or delaying punishment, put in a false plea of pregnancy in bar of execution (*ante*, p. 155). The capital sentence was subsequently remitted by the advice of Sir W. Gull and Dr. Orange, of Broadmoor, and the prisoner was sent to Broadmoor Asylum on their statement that she was of unsound mind.

It appears that her father had died in a lunatic asylum when of middle age, having suffered for years before his death from homicidal and suicidal mania; her brother died at Earlswood Asylum an epileptic idiot; her grandfather was a subject of cerebral disease; her sister suffered from hysteria; other relations were afflicted with nervous diseases of some kind, and she herself appears to have exhibited, some eighteen years before, symptoms of hysteria and hysterical paralysis. ('Lancet,' 1872, 1, pp. 89, 107, 734; and 'Med. Times and Gaz.' 1872, 1, pp. 71, 101, 111.) This proved hereditary tendency to insanity in her family was the main cause of the commutation of the capital sentence. If we except the nature of the crime, showing as it did an utter recklessness for human life, there was nothing to indicate unsoundness of mind either in a medical or a legal sense in this woman. The only evidence of insanity would be the atrocity of the act itself, but on this ground *Mary Ann Cotton*, recently executed at Durham for murder by poison, might have equally been pronounced insane. There was evidence that this woman had destroyed with arsenic, in the most reckless manner, children, husbands, relatives, and friends, to the number of twenty persons! She sent her son, for whose murder she was tried, to procure the poison with which she subsequently killed him; but this woman was condemned and executed. She could not plead hereditary taint or hysteria of ancient date!

When a defence of insanity is set up, on a charge of murder, in order to warrant the jury in acquitting a prisoner, it must be proved affirmatively that he is or was *insane in a certain legal sense*: if this fact be left in doubt, and if the crime charged in the indictment be proved, it is their duty to convict him. (*Reg.* v. *Stokes*, 3 Car. and Kir., p. 185.) The witness must remember that it is not medical but legal insanity which has to be proved to the satisfaction of the jury. In examining an accused person who is alleged to have committed a crime while labouring under insanity, the plea may be good, and yet the person be *sane* when examined. This was observed in the case of a lunatic who killed his mother in February 1843; there was no doubt that he was insane at the time of the act, but two days afterwards he was found to be of perfectly sound mind. (See also case at p. 561, *ante*.) This sudden restoration to reason is sometimes met with in cases of homicidal mania. For a remarkable instance of this description, where the motive of a man in killing his wife was apparently jealousy, see report by MM. Leuret and Ollivier. ('Ann. d'Hyg.' 1843, vol. 2, p. 187; also 1836, vol. 2. p. 122.) Lord Hale mentions a case in which a woman, soon after her delivery, killed her infant;

she confessed the crime, was carried to prison, fell into a deep sleep, awakened quite sane, and wondered how she came there. (See also the case of *M'Callum*, Alison, p. 650.)

It is customary to say that they who commit these heinous crimes while labouring under insanity are irresponsible. By this we are not to understand that they are allowed to go free; on the contrary, they are subjected to a close confinement—perpetual in all cases of murder, but depending on their recovery in respect to crimes of less magnitude. A power is vested in the Executive only to discharge recovered criminal lunatics, according to circumstances. A large asylum has been recently established by Government at Broadmoor, for the reception of all criminal lunatics; and those who have been acquitted of murder on the ground of insanity, after having once entered this establishment, are, or ought to be, as dead to the world as if the earth had closed over them. Beyond the walls, whether sane or insane, the murderers once committed to Broadmoor, it is said, never pass, either in life or after death. A writer who visited this establishment in the early part of 1865 found there 400 men and about 60 women, and he calculated that the victims of their united crimes amounted to nearly 1,000 persons!

HOMICIDAL MONOMANIA.

Homicidal mania or monomania is commonly defined to be a state of partial insanity, accompanied by an *impulse* to the perpetration of murder: hence it is sometimes called impulsive or paroxysmal mania. There may or may not be evidence of *intellectual* aberration, but the main feature of the disorder is the existence of a destructive impulse which, like a delusion, cannot be controlled by the patient. This impulse, thus dominating over all other feelings, leads a person to destroy those to whom he is most fondly attached, or any one who may be involved in his delusion. Sometimes the impulse is long felt, but concealed and restrained: there may be merely signs of depression and melancholy, low spirits and loss of appetite, as well as eccentric or wayward habits, but nothing to lead to a suspicion of the fearful contention which may be going on within the mind. As in suicidal mania, many of those who are in habits of daily intercourse with the patients have been first astounded by the act of murder, and then only for the first time led to conjecture that certain peculiarities of language or conduct, scarcely noticed at the time, must have been symptoms of insanity. Occasionally the act of murder is perpetrated with great deliberation, and apparently with all the marks of sanity. These cases are rendered difficult by the fact that there may be no distinct proof of the existence, past or present, of any disorder of the mind, so that the chief evidence of mental disorder is the *act* itself (*mania transitoria*); of the existence of insanity, in the common or legal acceptation of the term, before and after the perpetration of the crime, there may be either no evidence whatever, or it may be so slight as not to amount to proof. Such cases are regarded and described by the medico-legal writers as instances of *insanity of the moral feelings* only, and this condition has been called '*Moral insanity*' (*ante*, p. 478). Its existence, as a state independent of a simultaneous disturbance of the reason or intellect, is denied by the great majority of lawyers as well as by some eminent medical authorities. Whether such a condition exists or not is a simple question of fact, to be established if possible by clear and conclusive evidence. Its existence in the case of a person charged with murder appears to have rested hitherto on a mere medical dictum. Intelligible reasons have not been assigned by those witnesses who have sought to satisfy a Court of Law that this has as distinct an existence as *intellectual* insanity; in general, it is only alleged and not proved to exist in a given case. If its existence were satisfactorily established, it would, as Mr. Stephen observes, do away with one of the essential ingredients of crime—malice, and thus justify a jury in acquitting a person

charged with murder. The accused on these occasions is assumed to have been an involuntary agent. As Mr. Stephens suggests, it might be a good defence to admit that a man loaded a pistol and pointed it at the head of another, but that it was fired by a sudden involuntary action of the necessary muscles, and not by the prisoner's will. The only difficulty is to get a jury to believe it. The evidence given in support of the assertion that a man is morally insane is, generally speaking, at least as consistent with the theory that he is a great fool and a great rogue, as with the theory that he is the subject of a special disease the existence of which is doubtful. ('Criminal Law,' p. 95.) There is no doubt that the unrestricted admission of such a theory as this would go far to do away with all punishment for crime, for it would render it utterly impossible to draw a line between (moral) insanity and moral depravity. What is crime but an act arising from the perversion of moral feelings? Moral insanity in a person of *sound mind* is a contradiction in terms; whenever the mind is sound, a man's conscience and sense of right and wrong will always be sufficient to enable him to control or restrain evil desires and impulses. It appears to me that the great difference of opinion which exists on this subject between legal and medical authorities, turns rather upon the signification of words than upon any disagreement on the facts or the practical inferences to be drawn from them.

Causes.—The causes of homicidal monomania are assigned by Esquirol to cerebral irritation induced by bodily disease, long watching, excessive nervous excitement, vicious education, erroneous notions of religion, grief, destitution, and the power of imitation. With respect to the latter, it is a fact that the publicity given to horrible occurrences often excites a homicidal feeling in persons of weak minds. The sight of a weapon or of the intended victim also determines in an instant the perpetration of the act—the person feeling himself drawn on as he states by an irrational impulse which he can neither resist nor control. Disordered menstruation, owing to sympathy of the brain with the uterus, may likewise operate as a cause; and this it is the more important to observe, because the person affected may not have previously manifested any sign whatever of intellectual disturbance. (Case of *Brixey*, p. 577, *post.*) *Amenorrhœa* (suppressed menstruation) may be a latent cause of insanity among girls, especially in those cases in which there is any hereditary predisposition to the disorder. Such cases announce themselves by the non-appearance or long cessation of the menstrual function while the ordinary symptoms of chlorosis indicate the existence of this state. (Millar.) By the sympathy of the uterine functions with the brain there may be some intellectual disturbance, indicated by waywardness of temper, strange and immoral conduct, morbid appetite, and great irritability with excitement from slight causes. A crime may be suddenly perpetrated by such persons without apparent motive; and if clear proof of intellectual disorder before the occurrence be in all cases required, there is often no alternative but to convict the person as a sane criminal. Esquirol alludes to the case of a married woman, who at every menstrual period experienced a strong desire to kill her husband and children, especially when she saw them lying asleep. Parturition and suppressed lactation are likewise causes, and in this case the disorder may assume the form of what is called PUERPERAL MANIA. It is important for a medical jurist to bear in mind that persons who are likely to be attacked by homicidal mania are not always characterized by a gloomy, melancholic, or irritable disposition; the disorder sometimes shows itself in those who have been remarkable for their kind and gentle demeanour and quiet habits. In some cases the murderous disposition may give no warning of its existence; in others, however, it is preceded by a change of character corresponding to a sudden access of insanity.

Symptoms.—Homicidal mania, in its more common form, may make its ap-

pearance at all ages, even in children:—it is occasionally periodical, and the paroxysm of insanity is preceded by symptoms of general excitement. The patient experiences colicky pains, and a sense of heat in the abdomen or chest, —headache, restlessness, and loss of appetite, lowness of spirits; the face is flushed or pale, the pulse hard and full, and the whole body in a state of convulsive trembling. An act of violence is committed without warning, and the patient appears as if relieved from some oppressive feeling. He may be calm, and express neither regret, remorse, nor fear; he may coolly contemplate his victim, confess the deed, and at once surrender himself to justice. In some rare instances he may conceal himself, hide the weapon, and, like a sane criminal, endeavour to obliterate all traces of the crime—thus showing a perfect consciousness of the illegality or wrongfulness of the act, and a desire to evade discovery. These are the main features of crime, and unless there is independent evidence of mental disorder, or of some bodily disease affecting the brain, the conclusion should be that the person is sane and responsible. The great problem to be solved on these occasions is—What are the plain practical distinctions between defective reasoning power and perverted moral sense? The latter condition alone should not exculpate a person or absolve him from the usual punishment, or persons undeniably sane, who have committed crimes, should be equally exculpated and absolved from punishment.

The symptoms above described have been observed to be more aggravated in proportion as the homicidal impulse was strong. The propensity to kill is sometimes a fixed idea, and the patient can no more banish it from his thoughts than a person afflicted with insanity can divest himself of the delusive ideas which occupy his mind. (Esquirol, op. cit. vol. 2, p. 105.) It has been supposed that Esquirol here implies a state in which there is no perversion of *intellect*. The facts which he mentions, however, clearly prove the contrary; for if a patient has not the power to banish from his thoughts this propensity to kill, he has passed beyond the bounds of reason, and is really insane. The admission of this fact alone proves that his mind must be unsound. Esquirol says—before the perpetration of the act there may be no sign of irrational conversation or conduct: but he asks the question—Because there is no proof of irrationality, are we to assume that these persons possess reason? Is it possible to reconcile the existence of a rational state of mind with the murder of those who are most dear to them? (Op. cit. vol. 2, p. 102.) In Esquirol's view, therefore, it may be taken that mere perversion of *feelings* (insanity), irrespective of some latent aberration of *intellect*, does not exist, and moral insanity is a conventional term for a state in which the proofs of mental disturbance are not so clear as in the generality of cases.

An erroneous notion prevails in the public mind, that a homicidal lunatic is easily to be distinguished from a sane criminal by some *certain* and invariable symptoms or characters, which it is the duty of a medical witness to display in evidence, and of a medico-legal writer to describe. But a perusal of the evidence given at a few trials will surely satisfy those who hold this opinion, that each case must stand by itself. It is easy to classify homicidal lunatics, and say that in one instance the murderous act was committed from a motive —*i.e.* revenge or jealousy; in a second from no motive, but from irresistible impulse; in a third from illusion or delusive motive—*i.e.* mental delusion; in a fourth from perverted moral feeling without any sign of intellectual aberration. This classification probably comprises all the varieties of homicidal insanity, but it does not help us to ascertain, in a doubtful case, whether the act was or was not committed by a person labouring under any of these psychological conditions. It enables us to classify those who are *acquitted* on the ground of insanity, but it entirely fails in giving us the power to distinguish a sane from an insane criminal, or a responsible from an irresponsible lunatic.

According to M. Esquirol, whose views, more or less modified, are adopted by all writers on the medical jurisprudence of insanity, the facts hitherto observed indicate *three degrees* of homicidal mania :—

1. In the *first* degree, the propensity to kill is connected with absurd irrational motives or *actual delusion*. The person would be at once pronounced insane. Cases of this description are not uncommon, and they rarely create any difficulty. The case of *Reg.* v. *Wilson* (Lincoln Summer Assizes, 1864), referred to by Mr. Fitzjames Stephen, will furnish an illustration. A woman consulted a medical man as to pains in her head, loss of appetite, and low spirits after her delivery; she was also suffering from religious despondency. While in this state she got up in the night and drowned four of her children in a cistern. She gave this account of the act:—she washed the children, put them to bed, and retired herself about 10 o'clock, but could not sleep; and between 12 and 1 o'clock it was suggested to her mind, as she says, by a black shadowy figure, that if they were in heaven they would be out of danger and better done to, than she could do for them. It was still further suggested to her mind, in the same way, that she could easily put them into the cistern, and she at once proceeded to do so; it was better for them to die young than to grow up wicked. (See Stephen's 'Crim. Law of England,' p. 91.) The case of *Mrs. Brough*, who murdered six of her children at Esher, was somewhat similar in its details. This woman, at whose trial I attended on the part of the Crown, stated that while thinking of her children, during the night, a black cloud came over her which seemed to surround her and she felt compelled to kill them. (*Reg.* v. *Brough*, Guildford Summer Assizes, 1854.) In other instances, those who have perpetrated such a series of murders, have stated that they had had the same sensation of darkness or a black spectre brooding over them just before the perpetration of the act.

2. In the *second* degree, the desire to kill is connected with *no known motive*. It is difficult to imagine a motive for the deed; the person appears to have been led on by some impulse. With respect to this class of cases, Mr. Stephen observes: 'There are motives for all acts even the maddest, but it is frequently impossible to assign them specifically. It is, however, generally possible to form an opinion whether a given act was done from some unknown mad motive, or from some unknown sane motive.' (Op. cit. p. 88.)

3. In the *third* degree, the impulse to kill is *sudden*, instantaneous, unreflecting, and *uncontrollable* (*plus forte que la volonté*). The act of homicide is perpetrated without interest, without motive, and often on persons who are most fondly loved by the perpetrator. (Esquirol, 'Maladies mentales,' vol. 2, p. 834.) It is this form, which has been called 'impulsive insanity,' which has given rise to so much contention on trials for murder in which insanity is set up as a defence, and therefore it will be well to consider this subject in a legal aspect. Mr. Stephen thus comments upon it:—'It is said that on particular occasions men are seized with irrational or irresistible impulses to kill, to steal, or to burn, and under the influence of such impulses they sometimes commit acts which would otherwise be most atrocious crimes. It would be absurd to deny the possibility that such impulses may occur, or the fact that they have occurred and have been acted on. Instances are given in which the impulse was felt and resisted. The only question which the existence of such impulses can raise in the administration of criminal justice, is whether the particular impulse was really *irresistible* as well as *unresisted*. If it was irresistible, the person accused is entitled to be acquitted, because the act would not then be voluntary and not properly his act. If the impulse was *resistible*, the fact that it proceeded from disease would be no excuse at all. If a man's nerves were so irritated by a baby's crying that he instantly killed it, his act would be murder; it would not be less murder if the same irritation and cor-

responding desire were produced by some internal disease. The great object of the criminal law is to induce people to control their impulses; and there is no reason why, if they can, they should not control insane as well as sane impulses. The proof that an impulse was irresistible depends on the circumstances of the particular case. The commonest and strongest cases are those of women who, without motive or concealment, kill their children after recovery from childbed' (puerperal mania). (Op. cit. p. 95.)

The three forms in which a homicidal propensity may thus present itself in cases of insanity, differ from each other only in degree—the two first being strongly analogous to, but lighter modifications of the third. All the cases which came before M. Esquirol had these features in common—an irritable constitution, great excitability, singularity or eccentricity of character; and previously to the manifestation of the homicidal feeling there was a gentle, kind, and affectionate disposition. As in other forms of insanity, there was some well-marked *change of character* in the mode of life; and this may be taken as a proof that there must have been some degree of intellectual disturbance. The period at which the disorder commenced and terminated could be easily defined, and the malady could be almost always referred to some moral or physical cause. In two cases it was traced to the change produced by puberty, and in four to the power of imitation. Attempts at suicide preceded or followed the attack: all wished to die, and some desired to be put to death like criminals. In none of these cases was there any discoverable motive for the act of homicide.

M. Esquirol believes that there are well-marked distinctions between this state and that of the sane criminal. Among these he enumerates: 1. The want of accomplices in homicidal mania. 2. The sane criminal has *always* a motive—the act of murder is only a means for gratifying some other more or less criminal passion, and is almost always accompanied by some other wrongful act: the contrary exists in homicidal mania. 3. The victims of the criminal are those who oppose his desires or his wishes—the victims of the monomaniac are among those who are either indifferent to or who are the most dear to him. 4. The sane criminal endeavours to conceal, and if taken denies the crime: if he confesses it, it is only with some reservation, and when circumstances are too strong against him; but he commonly denies it to the last moment: it is the reverse with the monomaniac. The exceptions to which these characters are open will be considered hereafter. They have, undoubtedly, greater value in their combined than in their individual application, and when in any case they coexist, there is strong reason to believe that the person accused of murder is labouring under homicidal mania. The great difficulty in these cases, however, is to distinguish *moral depravity* from *insanity*. I agree with a medico-legal writer on this subject, that 'no hideousness of depravity can amount to proof of insanity, unsupported by some evidence of a judgment incapacitated, or of a will fettered by disease. In those cases of mental disorder in which the emotions are perverted, and where there is no clear proof of *deranged intellect*,—cases which do from time to time occur,—the presumption of insanity in regard to a criminal action has to be upheld by evidence of a suspension of the will. If it can be proved that the act was not voluntary, this does away with its criminal nature.' (Jamieson's Lectures on the Med. Jur. of Insanity, 'Med. Gaz.' vol. 48, p. 181.) But it is impossible in many cases to produce satisfactory evidence of the suspension of the will: this suspension can only be *assumed* from the act—a dangerous assumption, and one that might lead to the confusion of crime with insanity, and the exculpation of all criminals.

Legal tests.—Admitting the existence of homicidal mania as thus defined by Esquirol, it may become a question, how, when pleaded for one charged with

murder, it is to be practically distinguished from a case in which the crime has been perpetrated by a really sane person. Tests, both medical and legal, have been proposed. The *legal test* was explicitly stated in the following terms by the whole of the judges in conference, in answer to queries put by the House of Lords in the case of *M'Naughten*, who was tried and acquitted on the ground of insanity (June 19, 1843):—

'Notwithstanding a party commits a wrong act while labouring under the idea that he was redressing a supposed grievance or injury, or under the impression of obtaining some public or private benefit, he is liable to punishment. The jury ought in all cases to be told that every man should be considered of sane mind until the contrary was clearly proved in evidence; that, before a plea of insanity should be allowed, undoubted evidence ought to be adduced that the accused was of *diseased mind*, and that at the time he committed the act *he was not conscious of right or wrong*. Every person was supposed to know what the law was, and therefore nothing could justify a wrong act, except it was clearly proved that the party did not know right from wrong; if that was not satisfactorily proved, the accused was liable to punishment. If the *delusion* under which a person laboured were only *partial*, the party accused was equally liable with a person of sane mind. If the accused killed another in self-defence, he would be entitled to an acquittal; but if the crime were committed for any supposed injury, he would then be liable to the punishment awarded by the laws to his crime.' ('Brit. and For. Med. Rev.' July 1843, p. 273.)

It would thus appear, that the law, in order to render a man responsible for a crime, looks for a *consciousness of right and wrong, and a knowledge of the consequences of the act*; while the administration of justice rests on the principle that every one knows the law and fears its punishment. Thus, the complete possession of reason is not essential to constitute the legal responsibility of an offender; and it is also to be inferred, from the results of several cases, that a man may be civilly incompetent, but sufficiently sane to be made criminally responsible. The proofs required in the two cases are essentially distinct.

It has been objected to this *legal test*, that it is insufficient for the purpose intended: it cannot, in a large majority of cases, enable us to distinguish the insane homicide from the sane criminal. Many *insane persons* have committed acts which they knew to be wrong, and of the criminality of which they were at the time perfectly conscious. They have been known to murder others, in order to receive the punishment of death at the hands of the law; and therefore they must have been conscious of the wrongfulness, or rather of the illegality, of the act which they were perpetrating, and have known that they were committing an offence against the law of man. In short, the criminal nature of the act has often been the sole motive for its perpetration! ('Ann. d'Hyg.' 1852, 1, 363.) It has been suggested with some truth, that it is rather the imperfect or defective appreciation of the motives to right or against wrong action, which leads to crime among the insane, and not the mere ignorance of right and wrong. Most lunatics have an abstract knowledge that right is right and wrong wrong; but in true insanity the voluntary power to control thought and actions, and to regulate conduct by this standard, is impaired, limited, or overruled by insane motives. A lunatic may have the power of *distinguishing* right from wrong, but he has not the power of *choosing* right from wrong. A criminal is punishable not merely because he has the power of distinguishing right from wrong, but because he voluntarily does the wrong, having the power to choose the right. (Jamieson's Lectures on Insanity, 'Med. Gaz.' vol. 46, p. 827.) The case of *Hadfield*, who was tried for shooting at George III. while sitting in his box at the

theatre, and acquitted on the ground of insanity, furnishes an example of the existence of insane delusion, coupled with a knowledge of the consequences of the act which he was about to commit. He knew that in firing at the King he was doing what was contrary to law, and that the punishment of death was attached to the crime of assassination; but the motive for the crime was that he might be put to death by others,—he would not take his own life. Again, *Martin* the incendiary admitted that he knew he was doing wrong, according to the law of man, when he set fire to York Cathedral: he was conscious that the act was illegal, but he said he had the command of God to do it. Thus, then, we find that a full consciousness of the illegality or wrongfulness of an act may exist in a man's mind at the time of its perpetration, and yet, in spite of this, he may be legally acquitted on the ground of insanity. But it may be said this is an insane or delusive consciousness, and part of the insanity under which he labours. This, however, is a mere assumption, not justified by the facts.

The legal test of a knowledge of the nature of the crime, or of right and wrong, is a frequent cause of inconsistent and even conflicting verdicts. The case of *Reg.* v. *Westron* (Central Criminal Court, February 1856) furnishes a curious illustration of this. The prisoner was charged with the murder of a Mr. Waugh, a solicitor. On some provocation, partly real and partly based on an exaggerated view of his rights, the prisoner shot the deceased in open day in a public thoroughfare. The only question therefore for the jury was the state of mind of the prisoner at the time of the act. It was proved that he was ill-tempered and violent about trifles; but he had an acute knowledge of business, and lived by himself in various lodgings. The persons with whom he had associated, deposed that his conduct was so strange and unreasonable at times that they were glad to get rid of him as a lodger. Evidence was also given to the effect that several members of his family had been insane, and that the prisoner himself three years previously had suffered from mental excitement, but it was not such as to render restraint necessary. The medical witnesses declined to say—in answer to questions put by the learned judge and counsel—that the prisoner was in such a state of mind as to be incapable of knowing that the act of killing a man was wrong. Dr. Synnot properly observed that many lunatics would be perfectly well aware that such an act was wrong. On this it was contended, for the prosecution, that as the prisoner must have known what he was doing, he was fully responsible. The jury were, as usual, directed to decide whether the prisoner was proved to have been in such a state of mind, at the time the act was committed, that he did not know the nature and quality of the act, or the distinction between right and wrong. Of course upon the medical evidence the jury had no option but to find the prisoner guilty of 'wilful murder,' but they recommended him to mercy on account of an alleged 'predisposition to insanity.' This verdict was tantamount to 'not guilty on the ground of insanity,' and sentence of death was therefore simply recorded. Under such a verdict the learned judges appear to have felt that the usual punishment of death for wilful murder could not be carried out. The jury were bewildered by the test of guilt submitted to them: they appear to have considered the man insane, but that his insanity had not reached the legal standard of an entire absence of knowledge of right and wrong. The general history of the prisoner and his crime tended to show insanity, but there was no reason to believe that it had reached that point at which there is a loss of all knowledge of the nature and quality of an act perpetrated, or of its unlawfulness. On the contrary, the prisoner deliberately shot the deceased out of revenge for a supposed injury; his whole conduct showed that he knew the act was illegal, but he set the law at defiance. *A man actuated* by mere brutal recklessness could have done no more.

Medical tests.—The *tests* which have been proposed by medical jurists for detecting cases of homicidal mania are as follows:—

1. The acts of homicide have generally been preceded by other striking *peculiarities of conduct* in the person,—often by a total change of character.

2. Those persons who are affected with it have in many instances previously or subsequently attempted *suicide*—they have expressed a wish to die or to be executed as criminals. These supposed criteria have been repeatedly and very properly rejected, when tendered as medical proofs of insanity in Courts of Law. They are of too vague a nature, and apply as much to cases of moral depravity as of actual insanity; in short, if these were admitted as *proofs*, they would serve as a convenient shelter from punishment for many sane criminals.

3. *Motive for crime.*—The acts are without *motive* or they are in opposition to all human motives. A man known to have been tenderly attached to his wife and children murders them,—a fond mother destroys her infant. It is hereby assumed or implied that persons who are sane never commit a crime without an apparent motive, and that in the perpetration of a criminal act, an insane person either never has a motive, or has one of a delusive nature only. If these propositions were true, it would be easy to distinguish a sane from an insane criminal; but the application of the rule wholly fails in practice. In the first place, the non-discovery is here taken as a proof of the non-existence of a motive; while it is undoubted that motives may exist for many atrocious criminal acts without our being able to discover them—a fact proved by the numerous recorded confessions of criminals before execution, in cases in which, until these confessions were made, no motive for the perpetration of the crime had appeared to the acutest minds. (*Reg.* v. *Hatto*, Bucks Lent Ass., 1854.) In the case of *Courvoisier*, who was convicted of the murder of Lord William Russell in June 1840, it was an undue reliance upon this alleged criterion, before the secret proofs of guilt accidentally came out, which led many to believe that this man could not have committed the crime; and the absence of motive was urged by his counsel as the strongest proof of his innocence. It was ingeniously contended 'that the most trifling action of human life had its spring from some motive or other.' This is undoubtedly true, but it is not always in the power of a man untainted with crime, to detect and unravel the motives which influence criminals in the perpetration of murder. No reasonable motive was ever discovered for the atrocious murders and mutilations perpetrated by *Greenacre* and *Good*, yet these persons were very properly made responsible for their crimes! It would be a fatal error to infer insanity from what is termed the inadequacy of motive.

In the inquiry whether a *particular* man committed the offence, the consideration of motive may be of great weight,—of very little, however, when the inquiry is whether the man who did it is insane. On the trial of *Francis* for shooting at the Queen, the main ground for the defence was, that the prisoner had no motive for the act, and therefore was irresponsible; but he was convicted. It is difficult to comprehend under what circumstances any motive for such an act as this could exist: and therefore the admission of such a defence would have been like laying down a rule, that evidence of the perpetration of so heinous a crime should in all cases be taken *per se* as a proof of the existence of insanity—in other words, of an irresponsible state of mind! Crimes have been sometimes committed without any apparent motive by sane persons, who were at the time perfectly aware of the criminality of their conduct. No mark of insanity or delusion could be discovered about them, and they had nothing to say in their defence; they have, however, been properly held responsible. On the other hand, lunatics confined in a lunatic asylum have been known to be influenced by motives in the perpetration of crimes; thus they have often murdered their keepers in revenge for ill-treatment

which they have experienced at their hands, as in the case of the *Queen* v. *Farmer* (York Spring Assizes, 1837). This man was acquitted as insane, while the clear motive for the homicide was revenge and ill-feeling. In another instance the act of murder was perpetrated by a lunatic from a real motive of jealousy. (*Reg.* v. *Goule*, Durham Summer Ass., 1845.) On the whole, the conclusion with respect to this assumed criterion is, that an absence of motive when there are indications of insanity, is a presumption in favour of the person being insane; but the non-discovery of a motive for a criminal act cannot of itself be taken as a proof of the existence of insanity or homicidal mania in the perpetrator. On the other hand, the fact that there exists such a motive (jealousy or revenge) as would instigate a sane man to an act of murder, is not of itself a proof that the person is sane and responsible.

The acts of the insane generally arise from motives based on delusion. In the state of idiocy an act of homicide has been committed merely as a result of imitation, and in imbecility,—from motives of an absurd and unreasonable kind. I am indebted to Dr. Sutherland for some of the particulars of the case of a young man, affected with imbecility, upon whom an inquisition was held in 1843. He was a person of childish manners, and among the symptoms of imbecility there showed itself a strong propensity for windmills. He particularly wished to be tied to one of the arms of the mill when they were going round: he would go any distance to see a windmill, and would sit watching one for days together. His friends removed him to a place where there were no mills, in the hope that this strange propensity would wear away. He collected a number of lucifer-matches and set fire to the house where Dr. Sutherland attended him, with a view that he might escape during the confusion to some imaginary land of windmills; and on another occasion he enticed a child into a wood, and, in attempting to murder it, cut and mangled its limbs with a knife in a horrible manner. How would any sane person have connected this propensity for windmills with the attempts at arson and murder? Yet it turned out that he had taken the resolution to commit these crimes in the hope that he should be removed to some place where there would be a mill! (Report on Lunatics, 'Quart. Rev.' 1844.)

4. *Confession.*—The subsequent conduct of the person: he seeks no *escape*, delivers himself up to justice, and acknowledges the crime laid to his charge. This is commonly characteristic of homicidal mania; for by the sane criminal every attempt is generally made to conceal all traces of the crime, and he denies it to the last. A case occurred in September 1843 which shows, however, the fallacy of this criterion. A man named *Dadd* murdered his father at Cobham, under circumstances strongly indicative of homicidal mania. He fled to France after the perpetration of the crime, and was subsequently tried, and acquitted on the ground of insanity. (See also another case, 'Ann. d'Hyg.' 1829, 2, 392.) On the other hand, it must be remembered that sane persons who destroy the lives of others through revenge or anger, often perpetrate murder openly and do not attempt to deny or conceal the crime, for the simple reason that denial or attempt at concealment would be hopeless. Again, a morbid love of notoriety will often induce sane criminals to attempt assassination under circumstances where the attempt must necessarily be witnessed by hundreds, and there can be no possibility of escape. The attacks made some years since upon the life of the Queen are sufficient to bear out this statement.

5. *Accomplices.*—The sane murderer has generally *accomplices* in vice or crime; the homicidal monomaniac has not. Upon this it may be observed that some of the most atrocious murders committed in modern times—as those perpetrated by *Greenacre*, *Good*, *Courvoisier*, and others—were the acts of solitary persons, with no mark of insanity about them, who had neither accomplices nor any assignable inducements leading to the commission of the crimes. It is,

however, a fact so far in favour of the existence of homicidal insanity, that the *insane* never have accomplices in the acts which they perpetrate. These criteria can hardly be described as medical; they are circumstances upon which a non-professional man may form just as safe a judgment as one who has made insanity a special study.

6. *Delusion in the act.*—The presence of *delusion* has been said to characterize an act of homicidal monomania, while premeditation, precaution, and concealment have been considered the essential features of the act of a sane criminal. With respect to delusion, it has been decided that the mere proof of the existence of this does not excuse the act: if the delusion be *partial* the party accused is still responsible; and if the crime were committed for an imaginary injury he would be held equally responsible. (See *ante*, p. 571.) Much stress was formerly laid upon the *delusion being connected with the act* in cases of alleged insanity; but it must be remembered that, except by the confessions of insane persons during convalescence, it is not easy for a *sane mind* to connect the most simple acts of a lunatic with the delusion under which he labours. Every act of homicide perpetrated by a really insane person is doubtless connected with some delusion with which he is affected; but it by no means follows that one who is sane should always be able to make out this connection, and it would be therefore unjust to rest the responsibility of an accused person upon an accidental discovery of this kind. Cases elsewhere related show how difficult it is to connect the delusions of the insane with their acts (p. 483, *ante*). Lord Erskine's doctrine in *Hadfield's* case, that, in order to render a person irresponsible, the act should be traced to the delusion, is therefore, medically speaking, untenable. The connection of a delusion with an act, when it can be really traced, may serve to exculpate an accused party, but the non-establishment of this connection proves nothing.

It may be further observed that premeditation, precaution, concealment, and flight are met with in crimes committed by both sane and insane criminals, although these acts are certainly strong characteristics of sanity. It should be a question for a jury whether, when they are proved to have existed in any criminal act, there might not have been such a power of self-control in the person, although in some degree insane, as to justify the application of punishment. It is not the presence of a slight degree of mental aberration which necessarily indicates a loss of power of controlling actions. Are such persons less beyond the influence of example than one half of the sane criminals who are punished? (See a paper by Brierre de Boismont, 'Ann. d'Hyg.' 1867, 1, pp. 76, 354.)

7. *A number of murders perpetrated at once.*—In the acts of sane criminals one person, or at the most two, may be destroyed; but, in cases of homicidal mania, it is not unusual to find a wife and several children killed by the husband, or four or five children at once destroyed by the wife. A repetition of these atrocities is as common among those who are really insane, as it is unusual among the sane. No motive but that which is based on some insane delusion could be suggested for such a series of murders. Thus, four infants may be found murdered by a mother, who admits the act but endeavours to account for it by asserting that she wished to convert them into angels, or to save them from destitution or exposure to worldly temptations.

Summary.—The foregoing considerations lead to the inference that there are *no certain legal or medical tests* whereby homicidal mania can be demonstrated to exist. Each case must be determined by the circumstances attending it: but the true test for irresponsibility in all doubtful cases appears to be, whether the person at the time of the commission of the crime, had or had not a *sufficient power of control to govern his actions*; or, in other words, whether, knowing the act to be wrong, he could not avoid the perpetration of it. This involves the consideration, not only whether insanity existed in the ac-

cused, but whether it had reached a degree to destroy, not a consciousness of the act, but volition—the will to do or not to do it. If from circumstances it can be inferred that an accused person had this power, whether his case falls within the above rules or not, he should be made responsible and rendered liable to punishment. If, however, he was led to the perpetration of the act by an *insane* impulse, or, in other words, by an impulse which his mental condition did not allow him to control (lésion de volonté, Esquirol), he is entitled to an acquittal as an irresponsible agent. The power of controlling an act appears to me to imply the existence of such a state of sanity as to render the person responsible: and when there is this want of control, it may be fairly concluded that the person is irresponsible. (*Reg.* v. *Brixey*, C.C.C. May 1845, p. 577 *post.*) Want of self-control is one of the most marked features of insanity. According to Dr. Radcliffe, it is a symptom in all cases, and what is important in reference to responsibility, is that in the order of development it takes precedence of delusion. Along with the want of self-control, there is also very frequently a want of voluntary power generally. The lunatic as a rule is led by his feelings and thoughts, and is strangely incapable of exercising his will effectually. Sometimes, in certain directions at least, his will appears to be powerless. (Croonian Lectures, 'Lancet,' April 5, 1873, p. 472.) Admitting that there may be some difficulty in applying such a test, it may be observed that one somewhat similar to this is constantly applied by juries, under the direction of our judges, to distinguish murder from manslaughter; and it is quite certain that sanity and homicidal mania are not more nicely blended than those shades of guilt whereby manslaughter passes into murder. The manner and circumstances under which a crime is committed will often allow a fair inference to be drawn as to how far a power of self-control existed or was exercised. A man in a violent fit of mania or delirium rushes with a drawn sword into an open street, and stabs the first person whom he meets; another, worn out by poverty and destitution, destroys his wife and children to prevent them from starving, and then probably attempts to murder himself:—these are cases in which there is a fair ground to entertain a plea of irresponsibility. But when we find a man like *M'Naughten*, who shot Mr. Drummond by mistake for another person, lurking for many days together in a particular locality, having about him a loaded weapon,—watching a particular person who frequents that locality,—not facing the individual and shooting him, but coolly waiting until he had an opportunity of discharging the weapon unobserved by his victim or others,—the circumstances appear to show such a perfect adaptation of means to ends, and such a power of controlling actions, that one is quite at a loss to understand why a plea of irresponsibility should have been received in such a case. (See *Reg.* v. *M'Naughten*, p. 580 *post.*) The acquittal was the more remarkable because there was no proof of general insanity, and the crime was committed for a supposed injury. According to the rules laid down by the fifteen judges, from questions submitted to them in connection with this case, this man should certainly have been convicted. These acquittals on the ground of insanity are often erroneously ascribed by public opinion to the crotchets of medical experts. They are, I believe, more commonly due to the powerful and impassioned addresses of counsel, who in civil as well as in criminal cases simply fight for victory wholly irrespective of any abstract ideas of justice. Medical opinions are brought forward or suppressed in order to complete a sensational picture, which is intended to show either that a lunatic is perfectly sane, or that a sane man who has committed a deliberate act of murder is beyond any reasonable doubt insane. The last words of the last eloquent speaker have far greater influence with the jury than the opinions of 'mad doctors' in the witness-box. These admit of being misrepresented and turned into ridicule without any power of reply on the part of those who gave them.

CHAPTER 98.

TEST OF RESPONSIBILITY FOR CRIMINAL ACTS — CASES IN ILLUSTRATION — RESTRICTIONS ON MEDICAL EVIDENCE — OPINIONS OF EXPERTS BASED ONLY ON MEDICAL FACTS — THE CASES OF M'NAUGHTEN AND TOWNLEY — GENERAL CONCLUSIONS.

Test of responsibility.—Most medico-legal writers agree that the best test for fixing responsibility on a person who has committed a crime is, whether at the time of its commission he had or had not a sufficient power of control to govern his actions. This view has been more or less advocated by Esquirol, Marc, Ray, Pagan, Jamieson, and other writers on the medical jurisprudence of insanity. (Esquirol, 'Maladies mentales,' vol. 2, p. 842.) M. Marc adopts throughout the opinions of Esquirol. ('De la Folie,' vol. 2, p. 71.) Dr. Ray, an intelligent American writer, considers that all forms of homicidal monomania are characterized by an '*irresistible* motiveless impulse to destroy life.' ('Med. Jur. of Insanity,' p. 268.) Dr. Pagan observes: 'The very loss of the *control over our actions* which insanity implies, is that which renders the acts which are committed, during its continuance, undeserving of punishment.' ('Med. Jur. of Insanity,' p. 211.) The test should be, according to Dr. Jamieson, 'Had the lunatic at the time of committing the deed a knowledge that it was criminal, and *such a control* over his actions as ought, if exerted, to have hindered him from committing it?' ('Med. Gaz.' vol. 46, p. 827.) Was his mind so disordered that he had lost that power of control which is possessed by a person in a sane state?—or, as Mr. Stephen puts it in popular language,—Was it his act? Could he help it? Did he know it was wrong? ('Crim. Law,' p. 91.) Thus then it would appear, from the concurrent views of medico-legal writers and of experienced practical observers of the habits and conduct of the insane, that we have here a criterion whereby the responsibility or irresponsibility of an accused person may be fairly tested: and although there may be some difficulty in determining how far the person did or did not possess a control over his actions—whether the impulse was or was not *insane* and irresistible (impuissance de la volonté); yet it must be borne in mind that the same objection applies with equal force, not only to the present legal test (the existence or non-existence of a *sane consciousness of right or wrong* under which persons are yearly acquitted or executed), but to every test or rule, medical or legal, that has hitherto been proposed either by physician or jurist. There is as great, if not greater, difficulty in distinguishing sane from insane consciousness of right and wrong, as in distinguishing a sane from an insane impulse in the perpetration of murder.

It is well known that persons seized with a desire to kill, have been able, in some instances, to exercise a certain degree of control over their feelings, and have thus spared the lives of their intended victims, and saved themselves from the imputation of a heinous crime. Esquirol has recorded several instances of this kind. ('Maladies mentales,' vol. 2, p. 807.) On other occasions the controlling power appears to be entirely lost. The case of *Reg.* v. *Brixey* was tried at the Central Criminal Court in June 1845. The prisoner, a quiet inoffensive girl, a maidservant in a respectable family, was charged with the murder of an infant. She had laboured under disordered menstruation, and, a short time before the occurrence, had shown some violence of temper about trivial domestic matters. This was all the evidence of her alleged (intellectual) insanity,—if we except that which was furnished by the *act* of murder. She procured a knife from the kitchen on some slight pretence, and while the nurse was out of the room cut the throat of her master's infant child; she then went

downstairs and told her master what she had done. She was perfectly *conscious* of the act she had committed; she treated it as a crime, and showed much anxiety to know whether she should be hanged or transported. There was not the slightest evidence that at the time of the act, or at any time previously, she had laboured under any delusion or intellectual aberration. The prisoner was acquitted on the ground of insanity probably arising from obstructed menstruation. ('Med. Gaz.' vol. 36, pp. 166, 247.) In trying this case by the medical rules laid down for detecting homicidal monomania (*ante*, p. 573), we shall see that it falls under the 3rd, 4th, and 5th only: *i.e.* absence of motive,—no attempt to escape,—no accomplices. Admitting the probability of a connection existing between suppressed menstruation and insanity in the abstract, there was no proof of the existence of intellectual insanity in the case of this girl,—yet she was acquitted! The existence of legal insanity in this case was a pure fiction based on the *act* committed, and on the *mode* in which it was committed. In his defence of *Brixey*, the late Mr. Clarkson uttered a plain medical and legal truth, in stating that '*no general rules can be applied to cases of this sort*: each case must be decided by the peculiar facts which accompany it.' Notwithstanding the precedent to the contrary furnished by this and other cases of a similar kind (*Reg.* v. *Stowell*, 'Med. Gaz.' vol. 47, p. 569), a Court of Law will commonly look for some clear and distinct proof of mental delusion or *intellectual* aberration existing previously to or at the time of the perpetration of the crime. If there be no proof of delusion, or of failure of intellect on the part of the accused, the plea of impulsive homicidal insanity may still be rejected. In *Reg.* v. *Burton* (Huntingdon Summer Assizes, 1848) the prisoner was indicted for the murder of his wife by cutting her throat. It appeared that he had no motive for killing her,—that he had been previously unwell, and restless at night,—that he did not attempt to conceal or deny the commission of the crime, and that he expressed no sorrow or remorse for it when perpetrated. The medical witness attributed the act to a sudden homicidal impulse: the prisoner's reason was not affected, and he had not laboured under delusions. This appears to have been a proper view of the case. The learned judge dissented from the medical opinion, because the excuse of an irresistible impulse co-existing with the full (?) possession of reason would justify any crime whatever. The facts rendered it probable that there was not a *full* possession of reason in this case; there was some evidence of bodily disease which may have affected the brain, as in the case quoted by Mr. Stephen (*ante*, p. 569). No rational being would commit an act of this kind under the circumstances mentioned. As in other cases, there may have been delusions springing up in the mind suddenly, and not revealed by the previous conduct or conversation of the accused. There appears to have been no stronger legal reason for convicting this prisoner than for convicting *Brixey*. He was nevertheless found guilty, while *Brixey* was acquitted.

In *Reg.* v. *Greensmith* (Midland Circuit, July 1837), the prisoner was charged with the murder of four of his young children. The facts were partly brought out in evidence, and partly by his own confession. He was a person of industrious habits and an affectionate father; but having fallen into distressed circumstances, he destroyed his children by strangling them, in order, as he said, that they might not be turned into the streets. The idea only came to him on the night of his perpetrating the crime. After he had strangled two of his children in bed, he went downstairs where he remained some time; but thinking that he might as well suffer for all as for two, he returned to the bedroom, and destroyed the two whom he had left alive. He shook hands with them before he strangled them. He left the house and went to a neighbour's, but said nothing of the murder until he was

apprehended the next day and taken before the coroner, when he made a full confession. Not one of the witnesses had ever observed the slightest indication of insanity about him. He made no defence, but several medical practitioners came forward to depose that he was insane. The surgeon of the gaol said that the man was feverish, complained of headache, and had been subject to disturbed sleep and sudden starts since the death of his wife, a short time before. He spoke of the crime he had committed without the slightest excitement, and the witness said he had heard enough of the evidence to satisfy him that the prisoner could not have committed such a crime as this and be in a sane state of mind. Dr. Blake, physician to the Nottingham Lunatic Asylum, said he was satisfied that the prisoner laboured under a delusion of mind. The prisoner's grandmother and sister had been under his care, the latter for entertaining a homicidal delusion—namely, that of destroying herself and her children. The judge declined receiving this evidence; and under his direction the prisoner was found guilty, and sentence of death was passed upon him. By the active interference of Dr. Blake and others, he was subsequently respited on the ground of insanity. (See 'Med. Chir. Rev.' vol. 28, p. 84.)

Among other cases which may be mentioned are those of *Reg.* v. *Frost* (Norwich Summer Ass. 1844), *Reg.* v. *Dickenson* (C. C. C., March 1844), and of *Nicholas Steinberg*, who in September 1834 cut the throats of his wife and four children, and then destroyed himself; of *Lucas*, who destroyed his three children in March 1842, and *Giles*, who cut the throats of two of his infant children at Hoxton, in January 1843. In these instances the acts of murder were accompanied by suicide. In the case of *Mrs. Brough* (Guildford Summer Ass. 1854), it was proved that the accused destroyed six of her children by cutting their throats, and then attempted to destroy herself. She was acquitted on the ground of insanity, although there was no proof of mental derangement. These cases may be regarded as presenting fearful examples of that state which has been called homicidal mania, in which there were no previous symptoms of *intellectual aberration* amounting to *insanity* in the common meaning of the term, or of any irregularity of conduct on the part of the homicides to justify the least interference with their civil liberty. A uniform feature of these cases was, that the murderous act was directed against those who were most closely connected with the homicides in blood, and to whom they were attached by the tenderest ties.

It appears to me that such crimes as these cannot be fairly or reasonably regarded as the act of *sane* and responsible persons; and even those who deny the independent existence of such a form of insanity as *homicidal monomania*, are in general compelled to admit that these dreadful motiveless murders are really the acts of insane and irresponsible agents. In reference to the case of *Brixey* (*supra*), if this woman was not labouring under homicidal mania, or an uncontrollable impulse to murder, it is clear from the result that her mental condition at the time of perpetrating the murder was such as to justify her acquittal on the ground of insanity; and medical jurists do not ask for more than this, although the means by which they seek to obtain acquittals in such cases may appear objectionable and unsuited to legal dicta. To assert that there was an unconsciousness of the nature or criminality of the act in this case would be conflicting with all the facts proved; and to contend that the consciousness of right and wrong, if it existed, was itself of an insane kind, would be a mere *ex-post-facto* assumption. The occasional existence of a state of homicidal mania, wholly irrespective of proved intellectual insanity, appears to me to be fairly established by this case, for there was not the slightest evidence of previous *intellectual* aberration or of insane conduct. The motiveless character of the act perpetrated and the mode of perpetrating it were the only indications.

The acquittal produced no shock to public feeling, like certain acquittals of a really doubtful kind. Had not the homicides in some of the instances above mentioned destroyed themselves, it is most probable that they would have been acquitted on the ground of insanity. In the case of *Staninought* an acquittal actually took place: this man, who had attempted suicide, recovered, was tried, acquitted on the ground of insanity, and he afterwards destroyed himself.

Much difference of opinion existed relative to the case of *M'Naughten*, who was tried for the murder of Mr. Drummond (Jan. 7, 1843) and acquitted on the ground of insanity. There is hardly a doubt that had the deceased given any personal offence to this individual before the perpetration of the act, he would have been convicted: if the deceased, from feeling annoyed at his following him, had struck him or pushed him away before the pistol was fired, it is most probable that the plea of insanity would not have been received. In the acquittal of this man, it is evident that considerable importance was attached to the non-discovery of a motive; for, had any kind of motive been apparent, it is certain that an alleged 'homicidal climax' *occurring at the particular moment when the deceased's back was turned*, and after several days' watching on the part of the assailant, would not have been admitted as a sufficient exculpatory plea! If we except the case of *Oxford*, tried for shooting at the Queen, there is perhaps no case on record in English jurisprudence where the facts in support of the plea of insanity were so slight; and when the cases of *Bellingham*, *Lees*, and *Cooper* are considered, it must be evident that there is great uncertainty in the operation of our criminal law. Thus it would be difficult to reconcile, upon *medical* grounds, the conviction of *Francis* with the acquittal of *Oxford*, both of them tried for the same crime (shooting at the Queen) committed under similar circumstances. Either some persons are improperly acquitted on the plea of insanity, or others are unjustly executed. If the punishment of death were abolished, there is no doubt that less would be heard of this plea; but in the meantime it is unfortunate that there is no other way of avoiding capital punishment than by striving to make it appear that a criminal is insane! (See Prichard, p. 399.) It is on this point that medical witnesses seem to me to lose sight of their true position—they too frequently look to results. When the punishment attached to an offence is not capital, it would appear that much stronger evidence is required to establish a plea of insanity than under other circumstances. This will be seen by reference to the case of *The Queen* v. *Grove* (Stafford Lent Assizes, 1842). The evidence of insanity was considerably stronger than that adduced in the case of *M'Naughten*, yet the prisoner was convicted! These two cases, occurring one after the other, display the great uncertainty attendant upon a defence of this kind.

The case of *Reg.* v. *Laurence* (Lewes Lent Ass. 1844) affords a remarkable contrast to that of *M'Naughten*. The prisoner had been arrested by a constable for a petty theft: he was taken to a police-station, where the inspector, who was an utter stranger to him, was at the time engaged in talking to some friends, his back being turned to the prisoner. The man suddenly seized a poker and struck the inspector a violent blow on the skull, from which he speedily died. The prisoner admitted that he struck the blow; that he had no motive for the act; and that he would have struck any one else who had been standing there at the time. He also said he hoped the deceased would die; he was glad he had done it, and he wished to be hanged. The evidence at the trial showed that there was no cause of quarrel between the parties, but that the prisoner appeared to be actuated by some *sudden impulse*, for which not the slightest reason could be assigned. This man was left to a chance defence, for the Court was actually obliged to assign counsel to him. There was no eloquent advocate to make a brilliant speech in his favour; there were no medical experts, profoundly versed in the subject of insanity, to contend for the ex-

istence of a 'homicidal climax,' or of impulsive homicidal mania; but there was simply a formal plea of insanity, resting upon the fact of the deceased being a stranger to him, and of there being, consequently, no motive for the act of murder. The jury negatived this plea, and the prisoner was convicted and executed! The differences between the case and that of *M'Naughten* were, that there was in *Laurence* less evidence of deliberation, with stronger evidence of sudden impulse; but there was not sufficient interest about the deceased, the prisoner, or his crime, to attract any great public attention!

This case had not long occurred, when another of a similar kind was the subject of a trial at the Central Criminal Court (*Reg.* v. *Hon. Ross Touchett*, October 1844). The prisoner, a young man, entered a shooting-gallery in Holborn, took up a pistol and deliberately fired at the proprietor of the gallery while his back was turned, thereby inflicting a wound which ultimately led to his death after the long period of eleven months. The prisoner was tried for shooting with intent to murder; the defence was insanity, founded on the absence of motive for the act, and on the presumption of hereditary taint. After having fired the pistol, the prisoner said he did it on purpose, for he wished to be hanged. There was no evidence of *intellectual* aberration; his landlady said he was a very regular and quiet person, but he had complained of a sensation of boiling at the top of his head! Dr. Monro considered that at the time of the act the prisoner was labouring under mental derangement. He admitted to him that he had no knowledge of Mr. Smith (the person whom he shot), but that he wished to be hanged, and had been brooding over suicide for some years. The prisoner referred to the case of *Laurence*, who had killed a man at Brighton (*supra*), and said that he wished to do something of the same kind in order to get himself hanged. The prisoner was well defended, and he was acquitted on the ground of insanity. What distinction can possibly be made by physician or jurist between these two cases—or how is it possible to lay down rules for the future guidance of medical witnesses under such capricious verdicts? The acquittal of *Touchett* may have been perfectly right, but then the conviction and execution of *Laurence* must be regarded as a public wrong!

In homicidal mania very vague meanings have been sometimes assigned to the term *delusion*. In *Reg.* v. *Burton* (Maidstone Lent Assizes, 1863), the prisoner, a youth of 18, was indicted for the murder of a boy at Chatham. There was no motive, but it was argued by his counsel in defence that he laboured at the time under a delusion—the delusion being a desire to be hanged. Mr. Joy, the surgeon of the prison, stated that he had had frequent opportunities of examining the prisoner while in gaol, and in his opinion he was perfectly sane; so far as witness could judge, he was under no delusion. The jury returned a verdict of 'guilty.' If the youth had believed that he had been already hanged for murder, this might have been considered a delusion; but a desire to be hanged or to die from any violent cause cannot be so regarded. The remarks of the learned judge (the late Mr. Justice Wightman) upon this kind of defence contains all that is necessary to show its fallacy. In passing sentence upon the prisoner he said: 'It is stated that you laboured under a morbid desire to die by the hands of justice, and that for this purpose you committed the murder. This morbid desire to part with your own life can hardly be called a delusion; and, indeed, the consciousness on your part that you could effect your purpose by designedly depriving another of life (for which you would have to suffer, as you knew, the punishment due to the greatest of crimes) shows that you were perfectly able to understand the nature and consequences of the act which you were committing, and that you knew it was a crime for which by law the penalty was capital. This was, in truth, a further, and I may say a deeper, aggravation of the crime; for you designedly intended to compass your own death by the murder of another.'

In the case of *Bryce* (High Court of Justiciary, Edinburgh, May 1864) the defence of insanity was rejected by the jury. The medical grounds on which it rested, were that the prisoner was a person of low mental organization, and that at the time of the murder he acted under a delusion that the person whom he murdered had called him a 'drunken blackguard.' But in answer to this it was stated that it was precisely persons of low mental organization who committed murder, and who required to be restrained by the fear of punishment; and as to the second point, the medical witnesses admitted that if it were true the deceased had called the prisoner a 'drunken blackguard,' there would be no delusion in the matter. ('Ed. Monthly Journal,' July 1864, p. 76.)

In *Reg.* v. *Adams* (Maidstone Summer Assizes, 1856) the prisoner was indicted for cutting and wounding her infant child, aged four months. It was proved that she was a quiet harmless woman: there was no motive for the act; and, when asked why she had done it, she said she had had an intention to do it for a fortnight, and that for three or four nights she had been unable to sleep in consequence of thinking about it; and at last she had done it. She was out of health at the time, and the medical evidence was to the effect that she was probably suffering from some morbid action of the brain when she committed the act. There was no evidence of *intellectual* insanity. Erle, J., considered that the prisoner was not criminally responsible on account of the state of her mind, and a verdict of 'not guilty' was returned on the ground of insanity. The case of *Dedea Redanies* (Maidstone Winter Assizes, 1856) called forth this plea, apparently because there was no other point on which a defence could possibly turn. The prisoner inveigled two girls from their home under false pretences, and murdered them by stabbing them deliberately, one after the other, on the high road. He admitted that he had destroyed them, and no motive could be suggested but a morbid and unfounded feeling of jealousy. The acts and correspondence of this man before and subsequently to his conviction were such as to convey an idea that he was in some degree insane; still there was no evidence that his insanity had reached a degree to justify his acquittal on this ground, while his conviction and punishment might fairly operate by preventing others labouring under like morbid feelings from indulging in a propensity to destroy life. The case of *Reg.* v. *Buranelli* (Cent. Crim. Court, April 1855), also a charge of deliberate assassination, was marked by a great difference of opinion among the medical experts. Dr. Conolly considered the prisoner's mind to be in an unsound state, while Drs. Mayo and Sutherland deposed that there was no unsoundness, and that the man was a hypochondriac rather than a lunatic. The crime was committed under circumstances which in my opinion fully warranted a conviction for murder. Peculiarities of conduct or conversation are not of themselves sufficient to justify an acquittal on the ground of insanity. Even admitting that the acts adduced in evidence were not those of a person of reasonable mind, this, as it has been elsewhere stated, is not legally sufficient to justify an acquittal. The insanity must have reached such a degree as to overpower the mind or will, and when this is not proved, no case for exculpation is made out.

Some doubt has existed whether a medical witness, on a trial in which a plea of insanity is raised, could be asked his opinion, from the evidence respecting the state of a prisoner's mind at the time of the commission of the alleged crime,—whether the accused was conscious at the time of doing the act, that he was doing something contrary to law, or whether he was then labouring under any and what delusion. It has been decided, by fourteen judges out of fifteen, that facts tending to lead to a strong suspicion of insanity must be proved and admitted before the opinion of a medical witness can be received on these points. (See 'Med. Gaz.' vol. 46, p. 240.)

In giving an opinion of the mental condition of an accused person, it is no

part of the province of a witness to modify that opinion according to the *punishment* which may follow if the plea be rejected, but simply according to the medical *facts* of the case. The Legislature only is responsible for the punishment adjudged to crimes. The late Dr. Mayo has justly observed, that a medical witness is summoned to a Court of Justice in order to enable the judge and jury to arrive at certain practical conclusions. The question proposed to him involves a simple fact and not its consequences; and if the latter consideration be entertained by him, it will be liable to bias his evidence on the fact, which is his legitimate topic. The definition of insanity becomes very expansive when its expansion may become protective to a criminal with whom we may happen to sympathize. The question whether the accused is a responsible agent is of a judicial nature: our evidence should be confined to the question whether the accused is *insane* in a certain sense or meaning in which it is understood and defined by law. ('Medical Testimony and Evidence in Cases of Lunacy,' 1854, p. 9.) A medical witness in these cases generally moulds his evidence to a foregone conclusion on the criminal responsibility of the accused, and he thus lays himself open to a remark from the judge that he must not encroach on the functions of the jury. It is certainly a great evil that, under the present mode of laying this question before a jury, the law operates unequally. One case becomes a subject of prominent public interest, and every exertion is made to construe the most trivial eccentricities of character into proofs of insanity, and to magnify the effects of a hereditary tendency, owing to a maternal grandmother's sister or some remote relative having been confined as a lunatic:—an acquittal follows. Another case may excite no interest,—it is left to itself: the accused is convicted, and either executed or otherwise punished, although the evidence of insanity, had it been as carefully sought for and brought out, would probably have been stronger in this than in the former instance.

That this kind of defence has been carried too far will be apparent from an observation of the late Baron Gurney, in the case of *Rex* v. *Reynolds*, where this learned judge said that 'the defence of insanity had lately grown to a fearful height, and the security of the public required that it should be closely watched.' So also the late Mr. Justice Coltman, in the case of *Reg.* v. *Weyman*, remarked that 'the defence of insanity was one which was to be watched with considerable strictness, because it was not any slight deviation from the conduct that a rational man would pursue under a given state of circumstances, which would support such a line of defence. In more recent cases it has been resorted to simply because apparently every other defence was shut out by the evidence.' Probably no case in modern times has produced greater excitement in the public mind, or so strongly directed attention to the defence of insanity in trials for murder, as that of *George Victor Townley*, who was charged with the murder of a young lady to whom he was engaged to be married. (*Reg.* v. *Townley*, Derby Winter Assizes, 1863). In this case there was a clear and distinct motive; there was a full consciousness of the nature of the act and of its penal consequences, as well as an absence of any delusion or of anything indicative of intellectual insanity in the conduct of the prisoner up to within a short time of the act, or in the numerous letters which he wrote. The prisoner had entered into an engagement with the deceased (Miss Goodwin). Shortly before the murder she had written to him requesting to be released from her engagement; she candidly told him that she had formed an attachment to another man. In his correspondence with her he requested a last interview, to hear (as he said) her determination from her own lips. The prisoner went to her house on the 21st August, 1863, induced the deceased to take a walk with him; and in about an hour she was found bleeding from severe wounds in her throat, from the effects of which she

soon died. Townley made no attempt to escape: he admitted that he had stabbed her, and assisted in carrying her dead body to Wigwell Hall, where she resided.

At the trial there was no answer to the charge of murder, except that the prisoner was insane when he perpetrated the act; that he was maddened partly by the refusal of the deceased to marry him, and partly by the knowledge that she was engaged to and would probably be married to another man. Some evidence was produced to show that the prisoner was impulsive and excitable at times, and had been reserved in his manners; but no one of his relatives had ever treated him or regarded him as insane, and, until this murder was perpetrated, no one had ever suggested that he had done any act or uttered any expression indicative of insanity. There was some evidence of the existence of insanity in the family of the prisoner's grandmother. The defence was thus chiefly thrown upon the medical evidence. Dr. F. Winslow, on the part of the relatives, examined the prisoner in gaol three months after the perpetration of the crime, and then considered the case of Townley to be one of 'general derangement,' and that he had not a sane opinion on any moral point. The prisoner expressed no regret or remorse for what he had done,—he denied that he had committed any crime—said deceased was his property, and that he killed her to recover and repossess himself of property which had been stolen from him. He knew that killing a person was contrary to law and wrong in this sense; and, from his saying he should be hanged, he must have known that he had done wrong. Dr. Gisborne, a surgeon of the gaol in which the prisoner was confined, gave similar evidence, and stated that when admitted in August, Townley was in the same condition as when he was examined by Dr. Winslow in November.

In reference to this defence of insanity, the following remarks were made at the time by the learned judge:—

Baron MARTIN.—'I have not sat here to try this case without well considering what question I should leave to the jury, and I will now read to you what I have written down, and what I propose to leave to the jury. I shall tell them that, although there might have been disease of the mind to some extent, yet if the prisoner knew that the act he was committing would probably cause death, and that the doing of it would subject him to legal punishment, there was criminal responsibility.'

Counsel for the Prisoner.—'Many men have been acquitted with approval who must have been convicted under such a direction.'

Baron MARTIN.—'I have drawn that from a summing-up of Justice Le Blanc, which has been much approved of, and from a decision of Lord Denman and another of Lord Lyndhurst, and I believe it to be a correct statement of the law. I have put aside from my consideration the ruling of the judge who tried *Bellingham*, because that ruling has been objected to.'

The charge of the learned judge embraced nearly all the contested points involved in the medical theories of homicidal or impulsive insanity, and it will serve to show that the evidence for the defence utterly failed to prove the existence of insanity at the time of the act, upon any reasonable or even probable grounds consistent with the proper administration of the law and the due protection of society. Baron Martin said:—'So far as the act of murder was concerned, it was the clearest case he had ever had the misfortune to try. It was plain that the prisoner had suffered (from his rejection by the deceased) as much as probably any man ever had suffered; but it was equally clear that he did not appear to be insane in the eyes of the landlady of the Bull's Head, or in those of Mr. Harris. The prisoner soon afterwards went to the Hall, and remained in the company of the young lady from half-past six to nearly nine o'clock, when the deed was committed. It is probable that he implored her to

renew the engagement, and perhaps reproached her with her conduct towards him; he then inflicted upon her the wounds which had caused her death. That was murder subject only to the question of insanity. No one could doubt that the prisoner knew what he was doing, and that his act would cause death. Unless he was insane therefore, under such circumstances he was guilty of murder. No word was more vague than insanity. Probably there was not one of the jury but was acquainted with some man who was in the habit of doing extraordinary things, and of whom people said, "Why, that man must be insane." Two years ago an investigation took place into the condition of mind of a gentleman from the eastern parts of the country. There was a long inquiry, which excited great public interest, and there was a great divergence of opinion among medical men. Great eccentricity of conduct on the part of that person was shown, yet there was nothing to relieve him from criminal responsibility. Probably he was not the wisest of men, yet he was of sufficient intellect to take care of himself and avoid doing injury to others. There was a somewhat similar case at the last Gloucester Assizes, in which a young lady was under the impression that a number of ladies had formed an unfounded dislike to her. In all probability she was labouring under a delusion with respect to these persons, yet she was as subject to the criminal law as any one in that Court. *What the law meant by an insane man was a man who acted under a delusion, and supposed a state of things to exist which did not exist, and acted thereupon.* A man who did so was under a delusion, and a person so labouring was insane. In one species of insanity the patient lost his mind altogether, and had nothing but instinct left; such a person would destroy his fellow-creatures, as a tiger would his prey, by instinct only. A man in this state had no mind at all, and therefore was not criminally responsible. The law, however, went further than that. If a man labouring under a delusion did something of which he did not know the real character, something of the effect and consequences of which he was ignorant, he was not responsible. An ordinary instance of such a delusion was where a man fancied himself a king and treated all around him as his subjects. If such a man were to kill another under the supposition that he was exercising his prerogative as a king, and that he was called upon to execute the other as a criminal, he would not be responsible. The result was, that if the jury believed that at the time the act was committed the prisoner was labouring under a delusion, and believed that he was doing an act which was not wrong, or of which he did not know the consequences, he would be excused. If, on the other hand, he well knew that his act would take away life, that that act was contrary to the law of God and punishable by the law of the land, he was guilty of murder. That was the real question they had to try. He had already stated his opinion that the law upon the subject had been best laid down by Justice Le Blanc, as able a judge as ever sat on the Bench. Justice Le Blanc, in the case alluded to, observed to the jury that it was for them to determine whether the prisoner when he committed the offence with which he stood charged was incapable of distinguishing right from wrong, or under the influence of any delusion which rendered his mind at the moment insensible of the nature of the act he was about to commit—since in that case he would not be legally responsible for his conduct. On the other hand, provided they should be of opinion that when he committed the offence he was capable of distinguishing right from wrong, and not under the influence of such a delusion as disabled him from discerning that he was doing a wrong act, he would be amenable to the justice of his country and guilty in the eye of the law. That in his (Baron Martin's) opinion was a correct statement of the law. He should not allude to Bellingham's case, because many were of opinion that that was an unsatisfactory trial. In a more recent case the late Lord Lyndhurst told the jury that they must be satisfied,

before they could acquit the prisoner on the ground of insanity, that he did not know when he committed the act, what the effect of it, if fatal, would be. With reference to the crime of murder, the question was, did he know that he was committing an offence against the laws of God and nature? In Oxford's case Lord Denman said: "Something has been said about the power to contract and to make a will; but I think that these things do not supply any test. The question is, whether the prisoner was labouring under that species of insanity which satisfies you that he was quite unaware of the nature, character, and consequences of the act which he was committing; or, in other words, whether he was under the influence of a diseased mind, and was really unconscious at the time he was committing the act that it was a crime." The jury must judge of the act by the prisoner's statements, and by what he did at the time. Unless they were satisfied—and it was for the prisoner to satisfy them—that he did not know the consequences of his act, or that it was against the law of God and man and would subject him to punishment, he was guilty of murder. The prisoner's letters appeared to be the most sensible letters he had ever read. The reason the prisoner gave for his act was, "She should not have proved false to me." Now, if his real motive was that he conceived himself to have been ill-used, and if he committed the act either from jealousy of the man who was preferred to him, or from a desire of revenge upon her, that would be murder. These were the very passions which the law required men to control, and if the deed was done under the influence of these passions there was no doubt that it was murder. The prisoner's expression that he should be hanged for it indicated that he knew the consequences of his act. Another reason he gave for what he had done was, "The woman who deceives me must die!" If a young lady promised to marry a man and then changed her mind, it might be truly said that she deceived him; but what would be the consequences to society if men were to say that any woman who treated them in that way should die, and were to carry out these views by cutting her throat? The prisoner claimed to exercise the same power over a wife as he could lawfully exercise over a chattel, but that was not a delusion, nor even like a delusion. It was the conclusion of a man who had arrived at results different from those generally arrived at, and contrary to the laws of God and man, but it was no delusion. Evidence indeed had been given of an actual delusion in the prisoner's mind in supposing that there was a conspiracy against him. That was an apt and common instance of delusion. There was also evidence of insanity in the maternal line, and it was true that insanity was hereditary and did descend in families. The object of this was to show that it was possible and not unlikely that an hereditary taint might exist in the prisoner. All the evidence, however, failed to prove the existence of any delusion in the prisoner's mind which could explain this act. None of his family conceived him to be mad. It was clear that such an idea had not entered into their minds, or they would not have recommended him to go and see Miss Goodwin. They treated him as sane from beginning to end, and as a proper person to contract matrimony and re-engage the affections of this young woman. The account of his state of mind upon receiving her letters was most probably correct. Most men would probably suffer in the same way under similar circumstances. It had been said by one of the witnesses that the prisoner did not know the difference between good and evil. If that was a test of insanity, many men were tried who did not know that difference—in truth, it was no test at all. The idea of a conspiracy was a delusion, but the mere setting himself up against the law of God and man was not a delusion at all. The question for the jury was—Was the prisoner insane, and did he do the act under a delusion, believing it to be other than it was? If he knew what he was doing, and that it was likely to cause death, and was contrary to

the law of God and man, and that the law directed that persons who did such acts should be punished, he was guilty of murder.' The jury returned a verdict of *Guilty* of wilful murder.

Taking into consideration all the circumstances of this case, it is in my opinion impossible to regard the act in any other light than as one of murder through jealousy. This was the general view of the public, who were kept for some time in a state of excitement in reference to this criminal. Three Commissioners in Lunacy, Mr. Campbell, Mr. Wilkes, and Mr. Foster, in consequence of a recommendation from the judge, were appointed by Secretary Sir G. Grey to see and examine the prisoner and report to him on his *then* mental condition—the inquiry at the trial having been confined to the state of his mind on the day of the murder. They reported as the result of their interview with him, that they could not consider him to be of sound mind, but applying the law as laid down by the judge he was justly convicted. This so far coincided with the view of the learned judge that the conviction was right. Under the 3rd and 4th Vict. c. 54. s. 1 (since repealed by the 27th and 28th Vict. c. 29), a certificate was drawn up by two justices and two medical men to the effect that the prisoner was insane. The capital sentence was respited but not commuted, and under the order of the Secretary of State the prisoner was removed to Bethlehem Hospital. As this proceeding was not considered to be satisfactory, a second commission was issued by the Government to make further inquiry into the state of mind of the prisoner. The commissioners were Dr. Hood, Dr. Bucknill, Dr. Meyer, and Dr. Helps—all men of good experience in reference to insanity. After two lengthened interviews with the prisoner, they came to the conclusion that he was of sound mind. The reasons which they assign in their report are clear and satisfactory, but too long to be quoted in this place. On their unbiassed judgment the sentence of the prisoner was commuted to penal servitude for life. He was removed to a convict prison, where he subsequently committed suicide.

Tested by the rules respecting criminal responsibility assigned by Mr. Fitzjames Stephen, the evidence in this case shows clearly intention, will, and malice (*ante*, page 577). There was an absence of proof of delusion, and to affirm that the act arose from an irresistible impulse is a mere assumption, without any fact in the previous or subsequent conduct of Townley to give it support. It may be well inquired of those who adopt the theory of irresponsibility in this case—If this is *insanity*, what is *crime*? If Townley was irresponsible for *an act* thus coolly perpetrated, in which the motive was so clear, no person should hereafter be convicted of murder who stabbed a woman from jealousy, revenge, or mortified pride. There was no doubt that Townley had a consciousness of right and wrong—that he knew the act was illegal and punishable by the law of the land; but his guilt did not rest upon these judicial tests of criminal responsibility. He had this knowledge in common with all sane and some really insane persons. In his case, however, insanity was neither proved nor rendered even probable, while it was disproved by his conduct and all the circumstances connected with the act of murder. It may be wrong to convict all men who come up to this judicial standard, *i.e.* who know right from wrong, because insanity may coexist with such knowledge; but it would be equally wrong to contend that, in the absence of any clear proofs of insanity, a man should be acquitted of crime when, under the influence of a strong motive, he was doing an act which he knew to be wrong, and of which he well knew and calculated the legal consequences. One medical defender of Townley, in order to account for the absence of symptoms of insanity, suggested that the duration of the homicidal impulse was short, and did not extend beyond the period of the commission of the act to which it impelled (*mania transitoria*)! There would be no difficulty in making out on these

principles that every act of murder was the result of impulsive insanity, and that all murderers while stabbing others are morally insane, and therefore, although they may show sanity before and afterwards, they are irresponsible for their acts. The legal test of a consciousness of right and wrong is much complained of, but in practice it certainly cannot be said to err on the side of harshness or severity; for it is much more common that sane persons are acquitted on the ground of insanity, than that one who is really insane is convicted and punished as a sane criminal. But the medical assumption here suggested to extenuate Townley's crime would go far to exculpate every criminal who committed an act of murder.

It cannot be denied that the doctrine of 'irresistible impulse' and the theory of impulsive insanity have been strained in recent times to such a degree as to create in the public mind a justifiable distrust of medical evidence on these occasions. It is obviously easy to convert this into a plea for the extenuation of all kinds of crimes for which motives are not apparent, and thus medical witnesses often expose themselves to severe rebuke. They are certainly not justified in setting up such a defence, unless they are prepared to draw a clear and common-sense distinction between impulses which are 'unresisted' and those which are irresistible. In the case of *Reg.* v. *Allnutt*, the prisoner, a boy aged 12, was convicted of poisoning his grandfather, under circumstances indicative of sane contrivance and deliberation. The medical evidence entirely failed to show that the prisoner was or ever had been insane in a legal sense. The remarks made by the judge who tried the case (Rolfe, B.) are of some medico-legal importance: 'The witnesses called for the defence had described the prisoner as acting from uncontrollable impulse, and they had made other statements, of the value of which it would be for the jury to decide; but he must say that it was his opinion that such evidence ought to be scanned by juries with very great jealousy and suspicion, because it might tend to the justification of every crime that was committed. What was the meaning of not being able to resist an impulse? Every crime was committed under an impulse, and the object of the law was to compel persons to control or resist these impulses. If it was made an excuse for a person who had committed a crime, that he had been goaded to it by some impulse which medical men might choose to say *he* could *not* control, such a doctrine would be fraught with very great danger to society.' Notwithstanding the cogency of this reasoning, there are however cases in which the force of circumstances compels a Court to adopt practically the theory of homicidal impulse, as the following case, *Reg.* v. *Jordan* (Lewes Summer Ass. 1872) will show. The prisoner was indicted for the murder of a child, whose throat he deliberately cut. There was no motive; he had previously borne an excellent character, and was very fond of children, and there was no evidence of mental disorder or intellectual insanity. His wife had deserted him some time before, and he had fallen into a state of great depression. Martin, B., is reported to have said, 'Under such circumstances it was for the jury to consider whether it would be safe to convict the prisoner of murder. When such impulses came upon men, according to the medical evidence they were unable to resist them. It would be safe in such a case to acquit the accused on the ground of insanity.' The prisoner was acquitted on the ground of insanity.

Some medical men think, if they discover anything resembling a delusion in the mind of an accused person, that he is necessarily irresponsible; but the theory of the law as laid down by the judges in *M'Naughten's* case is, that notwithstanding a person labours under a delusion, if he commits an act which he knows to be contrary to law, he is liable to punishment (*ante*, p. 571). Dr. Mayo observes that the very case which elicited this answer (*Reg.* v. *M'Naughten*) *proves that the* practice is not in accordance with theory: 'The adequacy of

M'Naughten to comprehend the criminal nature of the homicidal act for which he was tried, was unquestionable, yet he was acquitted on the plea of insanity, without the smallest reference to the conditions on which alone it is exculpatory, although they had been distinctly set forth as not complied with in the opening speech of the Attorney-General. The prisoner was pronounced to be insane by several medical witnesses, and on this evidence the learned judge stopped the case, and directed an acquittal, without going into the question whether the prisoner was or was not ignorant of the illegal nature of his act. In his address to the jury, he used the ambiguous expression of a knowledge of "right and wrong" (not "legal and illegal") as absent in M'Naughten's mind.' ('Medical Testimony,' p. 86.) The terms 'right and wrong,' thus used, are certainly vague and undefined. If that which is legal is right, and that which is illegal is wrong, it would be only proper to discard the words, 'of a knowledge of right and wrong,' and place the question before the jury in accordance with the answers given by the judges in *M'Naughten's* case, namely, whether the prisoner knew at the time of committing the act that it was illegal. The test of responsibility assumed by it is purely theoretical, and such that it cannot be strictly carried into practice. With this admission it appears to me unnecessary to occupy space with metaphysical discussions regarding criminal responsibility: for however defective the rules,—if the *practice* of the law be in any one case in conformity with that which has been advised by writers on the Medical Jurisprudence of Insanity, although it may be adverse to the theory on which it is professedly based, this is all with which we have to concern ourselves:—the principle is admitted. The great defect in the English law is, not that it will not go even to the full extent of exculpating a person who has committed a crime with a full knowledge of its illegality, and under what may be called an 'uncontrollable impulse,' or an impulse which his reason was not sufficient to control, but the *uncertainty of its application.* The cases referred to show that an acquittal on the plea of insanity is on some occasions a mere matter of accident.

The following cases may be consulted with interest in reference to this subject:—*Reg.* v. *Johnstone* ('Med. Gaz.' vol. 37, p. 421); *Reg.* v. *Ovenston* ('Journal of Psychol. Med.' 1848, p. 193); and *Reg.* v. *Brough*, Guildford Summer Assizes, 1854 ('Journal Psychological Medicine,' 1854, p. 609). In the first two the prisoners were acquitted on the ground of insanity; although I quite agree with Dr. Mayo in thinking that in *Johnstone's* case there was not the slightest proof of insanity. ('Clinical Facts,' p. 208.) The reader will find other cases in the 'Med. Gaz.'(vol. 43, p. 255); and *Reg.* v. *Clarke*, Norfolk Lent Assizes, 1851; *Reg.* v. *Monkhouse*, Cent. Crim. Court, Dec. 1849; *Reg.* v. *Arnold*, Aylesbury Lent Assizes, 1850; and *Reg.* v. *Butter*, Shrewsbury Summer Assizes, 1853:—in Mayo's 'Clinical Facts,' 1847, p. 193; Croonian Lectures, 'Med. Times and Gaz.' 1853; also 'Medical Testimony,' 1854:—in the Lettsomian Lectures of Dr. F. Winslow, 'Lancet,' June 1853, 'Med. Gaz.' vol. 37, p. 421, and 'Journal of Psychol. Med.' 1848, p. 609:—in essays on 'Unsoundness of Mind in Reference to Responsibility,' by Mr. Knaggs, 1854; by Dr. Bucknill, on 'Unsoundness of Mind in Relation to Criminal Acts,' 1854; and by Mr. F. Stephen, on 'The Criminal Responsibility of Madmen' ('Judicial Papers,' vol. 1, p. 67); also his 'Criminal Law of England,' 1853, and 'Ann. d'Hyg.' 1867, 2, 331.

CHAPTER 99.

PUERPERAL MANIA—PYROMANIA—KLEPTOMANIA—EROTOMANIA—AIDOIOMANIA—DIPSOMANIA—RESPONSIBILITY OF DRUNKARDS—DELIRIUM TREMENS—SOMNAMBULISM—THE DEAF AND DUMB—FEIGNED DEAFNESS AND DUMBNESS.

PUERPERAL MANIA.

MANIA may present itself in other forms than those hitherto considered. Women who have been recently delivered are liable to sudden attacks, in which a disposition to murder their offspring is the most marked symptom. This has been long known and recognized by physicians as 'puerperal mania.' The disorder seldom attacks a woman before the third day,—often not for a fortnight, and in some instances not until several weeks after delivery. Out of ninety-two cases, the late Sir J. Simpson observed that the attack occurred in twenty-one, between the fifth and the fifteenth day. ('Med. Times and Gaz.' Sept. 1, 1860, p. 201.) The most frequent period is at or about the commencement of lactation, and between that and the cessation of the uterine discharges (lochia). According to Esquirol, it is generally preceded or attended by a suppression of the lochia and milk. The late Dr. Ashwell remarked that undue lactation might give rise to an attack of mania, under which the murder of the offspring might be perpetrated. ('Diseases of Women,' p. 732. See the case of *Reg.* v. *Lacey*, Nottingham Summer Assizes, 1858.) It may also come on after forced or voluntary weaning. The *symptoms* do not differ from those of mania generally, but it may assume any of the other forms of insanity; and in one-half of the cases, it may be traced to hereditary tendency.

According to Dr. Burrows, there is delirium, with a childish disposition for harmless mischief. The woman is gay and joyous, laughing, singing, loquacious, inclined to talk obscenely, and careless of everything around. She imagines that her food is poisoned; she may conceal the suspicion, and merely avoid taking what is offered to her. She can recognize persons and things; and can, though perhaps she will not, answer direct questions. Occasionally there is great depression of spirits, with melancholia. These facts are of some importance in reference to cases of alleged child-murder. This state may last a few hours, or for some days or weeks. The murder of the child is generally either the result of a sudden fit of delirium, or a sudden impulse, with a full knowledge of the wickedness and illegality of the act; so that the legal test of responsibility of a knowledge of right and wrong cannot be applied to such cases, except on the assumption that insanity already exists and taints the consciousness of the individual. Women have been known to request their attendants to remove the child, but have afterwards taken an opportunity to destroy it. Such cases are commonly distinguished from deliberate child-murder by there being no motive, no attempt at concealment, nor any denial of the crime on detection. Several trials involving a question of puerperal mania have been decided, generally in favour of insanity, within the last few years. Among these is that of *Reg.* v. *Ryder* (C.C.C. March 1856). There was an entire absence of motive in this as in most other cases of a similar kind. The mother was much attached to the child, and had been singing and playing with it on the morning of its death. She destroyed the child by placing it in a pan of water in her bedroom. The medical evidence proved that she had been delivered about a fortnight previously—that she had had an attack of fever, and that she had probably committed this act while in a state of delirium. She was acquitted on the ground of insanity: and Erle,

J., remarked that it was evidently a case in which the insanity was only temporary, and the prisoner might be restored to her friends on a representation being made in the proper quarter. In most of these cases it will be found that women are fully aware of the nature of the act, and that it is contrary to the laws of God and man: they even make every effort to resist it, but they are unable to control their actions like persons in a normal state. (See a paper on 'Eclampsia Parturientium,' by Dr. Seydel, Casper's 'Viertelj.' 1848, 2, p. 317.)

For an able analysis of the subject of Puerperal Insanity, by Dr. Reid, see 'Journal of Psychological Medicine' for 1848, pp. 128, 284.

Women in the *pregnant* state have been known to perpetrate murder apparently from some sudden perversion of their moral feelings: there has been probably latent intellectual disturbance, but not sufficient to attract the notice of friends. There is a great sympathy between the uterine organs and the brain, which may account for such cases; but I am not aware that irresponsibility on the ground of insanity has been admitted in this country under these circumstances. (See case, 'Ann. d'Hyg.' 1831, 1, 374; also 'Ann. d'Hyg.' 1859, 2, 334.) M. Brierre de Boismont states that he has known pregnancy to excite a disposition to steal. A woman who had previously borne a good character stole during her pregnancy a pair of shoes. The tribunal before which she was charged entertaining some doubts respecting this criminal act, required M. de Boismont to report on her case. He drew a conclusion favourable to the accused, and she was discharged. Without exaggerating the influence of this physiological state, it should be always taken into consideration. ('Ann. d'Hyg.' 1866, 2, p. 462.)

PYROMANIA.

Propensity to incendiarism.—This is described as a variety of monomania in which there is a morbid disposition of mind leading to impulsive acts of incendiarism without any motive. It is a condition not specially recognized by English jurists or in English Courts of Law. We are informed by the advocates of its independent existence, that it proceeds from a sudden impulse, or from delusive reasoning, but most commonly the latter. It has been said to occur in girls about the age of puberty, and is supposed to be connected with disordered menstruation. The case of *Jonathan Martin* has been frequently quoted as an instance of pyromania. He had, however, merely a delusion that he was deputed by God to burn down the Cathedral of York, in order to do away with the heresies which he supposed to exist in the Church. There was no doubt of his insanity; he had been already twice confined in an asylum. Nevertheless, as the late Baron Alderson (who was counsel for the prosecution) remarked, the act was perpetrated with much method. It seems that Martin remained behind after the afternoon service in the cathedral, and when left alone he went up into the belfry, cut off about eighty or ninety feet in length of the *prayer-bell rope*, which, being usually rung from below, had been drawn up and coiled up to that length there. With this rope he succeeded in knotting a sort of ladder, and throwing it over the iron gates of the choir, he climbed over by means of the knots. Being in the choir, he struck a light with a flint and his razor, lighted a candle which he had brought, collected the prayer-books, and set fire to the paper, close to the carved work at the Archbishop's throne, in two piles. He then cut away a silk curtain, gold fringe, &c., *which he stole*; and getting back by his rope-ladder into the body of the cathedral, he escaped through a window on the north side,—the most unfrequented part. He had provided himself with a pair of pincers, by which he forced the window, and let himself out by his

rope-ladder to the ground. A sane criminal could hardly have devised a better method of perpetrating the act, or of escaping after its perpetration. The defence, as in most of these cases, was insanity at the time of perpetrating the act, and not specially Pyromania.

This so-called mania is said to be not uncommon in young persons of both sexes about the age of puberty. Assuming that a morbid impulse of the kind may exist, it should be cautiously received as an exculpatory plea, since otherwise it might be easily converted into a means for withdrawing real criminals from all legal control. I would here especially direct the attention of the reader to an essay on this subject by the late Professor Casper of Berlin, in which he denies, with great probability, the existence of such a propensity as having any connection with insanity. He believes that incendiarism, perpetrated either with or without motive, is always a criminal act; and unless there is clear evidence of a disordered mind, it should always be punished as a crime. (Denkwürdigkeiten zur 'Med. Stat.' Berlin, 1846, p. 255; see also his 'Vierteljahrsschrift,' 1853, 1, p. 34.) A defence of this kind has been admitted in English law, but only in those instances in which there was strong reason to suspect the existence of intellectual aberration. ('Med. Gaz.' vol. 12, p. 80.) In one case (*Reg.* v. *White*, Wilts Summer Ass. 1846) the prisoner was convicted, on the principle that, although of weak intellect, she had reason enough to know right from wrong. (See 'Ann. d'Hyg.' 1833, 2, 357; 1834, 2, 94.)

Among several important trials in which a plea of insanity has been urged in defence in cases of arson is that of *James Gibson*, tried before the High Court of Justiciary, Edinburgh, Dec. 23, 1844, and of which a full report will be found in vol. 4 of Brown's 'Reports of Cases before the High Court,' 1845, p. 232. The prisoner was charged with setting fire to certain premises, and the defence chiefly rested upon the allegation, that he was in a state of mind which rendered him irresponsible for the act. Medical evidence was adduced in support of this proposition, but it failed to show that the insanity, if it really existed, had reached such a degree as to render the accused legally irresponsible; and it did not appear that any of the circumstances on which the medical witnesses relied as proofs of insanity, had manifested themselves until *after* the perpetration of the crime with which he was charged. The prisoner was convicted, and sentenced to transportation for fourteen years. There was nothing in this case to justify a remission of the usual punishment assigned to arson. Although it is here noticed under the section of 'Pyromania,' yet, strictly speaking, the defence turned rather upon the alleged existence of general insanity than upon that form of it in which the insanity is supposed to be attended with a propensity to incendiarism. The late Lord Justice-Clerk Hope directed the jury to deal with the case according to the views laid down by the Judges of England, and elsewhere quoted (*ante*, p. 571). He considered that the insanity to be proved as a ground of exemption must be total—*i.e.* 'the disorder must amount to an absolute alienation of reason. . . . No such principle is recognized in law as that a man, allowing a fancy or morbid feeling to get possession of his mind and temper, although it *disturbs* reason while it does not *overthrow* it, will escape punishment, because, instead of resisting the temptations of such ill-regulated, morbid, distempered, and ungovernable feelings and prejudices (whether called delusions or not), he gives way to them and indulges in their gratification and satisfaction.' These remarks, it will be seen, apply to the plea of insanity in general; and this learned judge further remarked, with respect to the knowledge of right and wrong: 'A man must believe, not that the crime is wrong in the abstract (for most madmen do admit murder to be wrong and punishable in the abstract), *but that the particular act*, committed under the influence of the motive which

seems to have prompted it, was not an offence against the law. One may know that in the abstract the act is punishable, and yet believe that his particular act is not in law a crime and not punishable.' From these extracts it will be perceived that the law of Scotland, in reference to the plea of insanity in criminal cases, is substantially the same as that of England.

In *Reg.* v. *Elderfield* (Guildford Summer Assizes, 1844) the prisoner was charged with arson; and Gurney, B., left it to the jury to say, not whether the prisoner had a weak or silly mind, but whether at the time he committed the act he was in such a state of mind as to know what he was about, and to be capable of distinguishing between right and wrong. The prisoner was acquitted on the ground of insanity. In another case (*Reg.* v. *Watts*, Norwich Winter Ass. 1844) the plea was negatived under the direction of the judge. On a more recent occasion (*Reg.* v. *Roberts*, Maidstone Winter Assizes, 1860), Baron Bramwell put the question of responsibility for arson in a still stronger light. Addressing the prisoner, who had pleaded guilty, he said: 'That you are of unsound mind I believe, but that is no reason why you should not be punished. I address the explanation of the reasons why I pass upon you the sentence which I am about to pronounce, not so much to your understanding as to those around who hear me, and to those whose duty it is to notice them. The law makes unsoundness of mind no excuse for offences, except it were such that you did not at the same time know the nature of what you were doing, and that it was wrong and unlawful. No doubt it is very unfortunate that persons of unsound mind should become by that affliction less under the influence of moral restraints and of the restraints of law; but it would be sad indeed for the public if, when those restraints are weakened, the protection of the law were to be withdrawn by the extension of impunity to crime. I am not sure that it is not more necessary to punish a madman than a sane man, so far as the protection of the public is concerned. I feel bound to sentence you to the same punishment as if you were sane.'

KLEPTOMANIA.

Propensity for thieving.—This term has been applied by Marc to that form of monomania which is said to manifest itself by a propensity to acts of theft. It is alleged by him and others that this propensity has often shown itself in females labouring under disordered menstruation, or among those who were far advanced in pregnancy—the motive being a mere wish of possession. Pregnancy, according to him, should be a good exculpatory plea when a well-educated woman, of strictly moral conduct, steals some unimportant article of no value compared with her worldly means and position in society. There are several instances on record showing that well-educated persons moving in a respectable sphere of society have been guilty of petty acts of theft. The articles taken have been valueless compared with their means. Instances of this kind have been brought before our Police-courts, and a motiveless impulse to theft has been occasionally pleaded; but in most of them the following facts have been clearly established by evidence:—1. A perfect consciousness of the act and of its illegality. 2. The article, though of trifling value, has still been of some use to the person,—thus women have stolen articles either adapted to female use, or on which money could be raised. 3. There have been art and precaution in endeavouring to conceal the theft; and 4, either a denial of the act when detected, or some evasive excuse. When circumstances of this kind are proved, either the parties should be made responsible, or theft should be openly tolerated. The evidence of a disordered state of mind should not be allowed to depend on the nature of the act, or every morally depraved person might bring forward a plea of insanity for any crime.

or offence. (See case, 'Ann. d'Hyg.' 1838, 2, 435.) In a case which came before a London Police-court in June 1865, a respectable woman was charged with stealing meat from a butcher's shop. It was alleged in defence that she had committed the theft while in a state of unconsciousness, although she had denied possession of the stolen article and had endeavoured to conceal it when charged with stealing. A plea of insanity might have led to her committal for trial; but the solicitor who appeared for the defence then said it was not exactly insanity but 'mental weakness' under which she laboured, and this affected her actions. She was fined for the theft, which had all the usual characters of sanity about it.

When the plea of insanity is raised in respect to other cases of stealing, the rule appears to be (per Tindal, C. J.), that there should be proof that the prisoner was incompetent to know that the particular act in question was a wrong one. (*Reg.* v. *Vaughan*, Monmouth Summer Ass. 1844.) In one instance an acquittal took place apparently on the ground of insanity (kleptomania) from amenorrhœa. (Carlisle Summer Assizes, 1845, *Reg.* v. *Shepherd*: Cormack's 'Edin. Jour.' August 1845, p. 632.) See cases by Dr. Liman, Casper's 'Viertelj.' 1865, 1, 298.

EROTOMANIA. AIDOIOMANIA.

Erotomania has been described by M. Esquirol as a chronic affection of the brain leading to mental disorder, in which amorous ideas are as predominant and as uncontrollable as religious ideas in some cases of religious melancholia. It occurs in both sexes, and in his opinion it differs from nymphomania and satyriasis in the fact, that it has its origin in a primary disturbance of the functions of the brain from disease. In nymphomania, however, the female sexual organs, and in satyriasis the male sexual organs, are at fault. These two mental conditions he regards as depending on morbid states of the sexual organs. Dr. Marc has suggested that the term *aidoiomania* (from *αἰδοῖον*, pudendum) is more appropriate; it signifies *furor genitalis*, and includes both nymphomania and satyriasis. ('De la Folie,' vol. 2, p. 182.)

It cannot be denied that, from sympathy between the genital organs and the brain, mania may sometimes show itself by excessive sexual desires leading to attempts by one on the other sex. When the disorder of the mind is established from the general conduct and conversation of the person, there is no difficulty in recognizing and admitting such cases; but when, on a charge of rape, it is alleged that the assailant laboured under aidoiomania, and was unable to control his desires, it then becomes a serious question how far such a defence is medically, morally, and legally admissible. When it is alleged that a man charged with this crime was led on by an irresistible impulse, and that he had not the power to control himself, it will devolve upon him to satisfy a jury on this point. This is the very difficulty to the admission of such a defence. Excessive amorous propensities may exist in sane and responsible persons, and if unresisted by due moral control, they might in a certain sense be described as irresistible; but this will hardly satisfy a Court of Law that a man could not help perpetrating a rape, when time and circumstances were especially favourable for such an assault on a woman. The sane ravisher will generally seek his opportunity—the real maniac will attack any woman openly and indiscriminately.

Such a defence is rarely set up in a case of rape, for the reason no doubt that all the circumstances of the case would be adverse to it. I have met with only one instance in which insanity has been pleaded for a criminal assault on a woman; it was tried at Glasgow on the 23rd of December, 1862. The crime was committed on Wednesday the 12th of November. On the following day, in his examination before the Sheriff-substitute, the accused, a married

man, æt. 40, appeared to be calm and collected and nowise different from other men. The account he gave of the transaction was, that he thought he was under the influence of the magistrates, and that he would lose his life if he did not have connection with the prosecutrix. They had a struggle together, and then he committed the act. His mother proved that he had been subject to fits of an epileptic character, which left him in a stupid state and scarcely conscious of his actions; he was also subject to delusions. It appeared that a few days before the commission of the crime he had had several seizures of more than usual violence, and it was suggested that at the time of the act he was under the influence of some of his delusions. The jury returned a verdict of 'not guilty on the ground of insanity.' ('Edin. Monthly Journal,' Feb. 1863, p. 772.) Admitting that some degree of insanity occurring at intervals existed in this man, it is difficult to understand how it manifested itself by forcible intercourse with a woman who was alone and unprotected! The act was perpetrated with a proper attention to opportunity, and under the same animal impulse as would have been manifested by a person not subject to epileptic fits. There was no proof that his insanity had shown itself on previous occasions in a sexual shape, or that it had reached such a pitch as to render him more ignorant than other ravishers, of the criminality of the act.

DIPSOMANIA. DRUNKENNESS.

Civil responsibility of drunkards.—This state, which is called in law frenzy or '*dementia affectata*,' is regarded as a temporary form of insanity. Jurists and legislators have differed widely respecting the degree to which drunkards should be made responsible for their acts. When the mind of a man is completely weakened by *habitual* drunkenness, the law infers irresponsibility, unless it plainly appears that the person was at the time of the act, whether of a civil or of a criminal nature, endowed with full consciousness and reason to know its good or evil tendency. Any *deed* or *agreement* made by a party when drunk is not invalidated by our law, except in a case in which the intoxication has proceeded so far as to deprive him of all consciousness of what he is doing; and a Court of Equity will not interfere in other cases, unless the drunkenness was the result of collusion by others for the purposes of fraud. When the drunkenness has occasioned a temporary loss of the reasoning powers, the person is incapable of giving a valid consent, and therefore cannot enter into a contract or agreement; for this implies *aggregatio mentium*, *i.e.* a mutual assent of the parties. In *Humfrey* v. *Maybury* (Q. B. July 1857), an action by plaintiff for work and labour, the evidence went to show that defendant had caused the plaintiff while drunk to sign a letter which was pleaded as a set-off. The jury were directed to consider whether the plaintiff had signed it when so drunk that he had no contracting or disposing will. The jury found in accordance with this view, and returned a verdict for the plaintiff. Partial drunkenness, therefore, provided the person knew what he was about, does not vitiate a contract or agreement into which he may have entered. Thus the law appears to define two states in drunkenness:—one in which it has proceeded to but a slight extent, and it is considered that there is still a power of rational consent; another in which it has proceeded so far that the person has no consciousness of the transaction, and therefore can give no rational consent. The proof of the existence of this last state would render all the civil acts of a person void. A confession made by a man while in a state of drunkenness is legally admissible as evidence against him and others, provided it be corroborated by circumstances. In a case tried a few years since the prisoner confessed, while drunk, that he had committed a robbery and murder which had taken place some time before, but of which he had not been suspected. He

mentioned a spot where the property of the murdered person had been concealed by him, and the whole of the circumstances of the murder. The property was found as he had described it, and the case was clearly brought home to him, chiefly by collateral evidence from his own confession. He was convicted. In a case tried at the Central Criminal Court, in October 1849, a man pleaded his drunkenness at the time of his first marriage as a defence to a charge of bigamy. There was some evidence to show that he was partly intoxicated when the ceremony was performed; it was proved, however, that he was conscious of the whole of the proceedings and he was convicted. ('Med. Gaz.' vol. 44, p. 762.)

Criminal responsibility of drunkards.—When *homicide* is committed by a man in a state of *drunkenness*, this is held to be no excuse for the crime. If voluntarily induced, whatever may be its degree, it is not admitted as a ground of irresponsibility, even although the party might not have contemplated the crime when sober. (*Reg.* v. *Reeves*, Derby Winter Assizes, 1844.) Thus it appears that when the state of drunkenness is such that any civil act would be void, a person may still be held legally responsible for a crime like murder. Some judges have admitted a plea of exculpation when the crime has been committed in a state of frenzy arising from *habitual drunkenness*; but even this is not general. The question whether the person was or was not drunk at the time of committing a crime may be, however, occasionally of some importance. It was held by Patteson, J., that although drunkenness is no excuse for any crime whatever, yet it is of very great importance in cases in which there is a question of *intention*. A person may be so drunk as to be utterly unable to form any intention at all, and yet he may be guilty of very great violence. (*Reg.* v. *Cruse*, 8 C. & P. p. 547.) If the drunkenness has produced a diseased state of the mind, then a criminal act perpetrated by the person might admit of exculpation on the ground of insanity, or the want of sane consciousness at the time of the act: but the difficulty is to prove in such cases the existence of actual disease to a sufficient degree to render the person irresponsible in a legal sense. When it is a question whether the accused was actuated by malice or not, a jury may under certain circumstances be required to take the fact of drunkenness into their consideration, and this may have some influence upon their verdict. While, then, drunkenness does not furnish any excuse for a crime, it may become material with reference to the *intent* with which an act has been perpetrated. ('Law Times,' Sept. 27, 1845, p. 542.) It is obvious that if drunkenness were to be readily admitted as a defence, three-fourths of the crimes committed in this country would go unpunished.

In cases in which the head has sustained any physical injury, as among soldiers and sailors, drunkenness even when existing to a slight extent, produces sometimes a fit of temporary insanity, leaving the mind clear when the drunken fit is over. The law makes no distinction between this state and ordinary drunkenness, although juries occasionally show by their verdicts that some difference ought to be made. (See cases in Alison, p. 653.)

Hallucinations and illusions are a common effect of drunkenness, and may lead to the commission of criminal acts. Marc relates a case where two friends being intoxicated, the one killed the other under an illusion that he was an evil spirit. The drunkenness of the accused was held to have been voluntary, and he was condemned to ten years' imprisonment with hard labour. A case of this description (*Reg.* v. *Patteson*) was tried at the Norfolk Lent Assizes, 1840. A man while intoxicated killed his friend, who was also intoxicated, under the illusion that he was some other person who had come to attack him. It is reported that the guilt of the prisoner was made to rest upon the fact, *whether, had* he been sober, he would have perpetrated the act under a similar

illusion! As he had voluntarily brought himself into a state of intoxication, this was no justification: he was found guilty of manslaughter, and sentenced to two months' imprisonment.

The proof of drunkenness may fail, but still, if the party charged with the death acted under an illusion, he will be acquitted. In *Reg.* v. *Price* (Maidstone Summer Ass. 1846), it was proved that the prisoner, who had been on friendly terms with deceased, was going home at night, having been previously in company with deceased at a public-house. According to the prisoner's statement, a man sprang upon him from the hedge by the roadside, and demanded his money and his watch, or else he said he would have his life: the prisoner closed with and beat him severely, inflicting such injuries that he died shortly afterwards. The supposed robber turned out to be his friend, and it was believed that he had made an attempt to rob the prisoner jokingly: the result, however, was that the attempt had ended in this fatal manner. The prisoner throughout told the same story, and there did not appear to be the slightest ground for believing that it was untrue. Coltman, J., after hearing the evidence of the witnesses, said it appeared to be quite clear that the prisoner had acted under an impression that he was protecting his own life from the attack of a robber, and under such circumstances he could not be held to be criminally responsible. The jury accordingly returned a verdict of *not guilty*, and the prisoner was discharged.

Intoxication is simply poisoning by alcohol, a light form of narcotic poisoning. A medico-legal question may arise in reference to the responsibility of persons for acts perpetrated while they are under the influence of other narcotics of a more powerful kind. Thus a person may have lost his self-control from the effects of opium or any of its preparations—Indian hemp, datura, chloroform, or substances of the like nature. If we except Indian hemp (bhang or gunja) and datura (in which muscular power may be excited), the general effect of other narcotics is to produce only a short stage of excitement, which is speedily followed by drowsiness, stupor, and muscular weakness. As a result of taking any of these drugs, a man may have hallucinations or illusions, and in this state commit murder like an insane person, who may fancy that he sees a hideous spectre or the devil before him. Dr. Chevers, in his 'Medical Jurisprudence for India,' describes several instances in which murders have been perpetrated by persons who had taken preparations of hemp (op. cit. pp. 541 *et seq.*). The legal test of irresponsibility for such acts he states as follows:—'No person can be acquitted unless it can be proved that, by reason of unsoundness of mind *not wilfully caused by himself*, he was unconscious, and incapable of knowing, in doing the act, that he was doing an act forbidden by the law of the land' (p. 566). Persons who voluntarily place themselves in such a condition as to be deprived of all self-control are therefore held responsible: and whether the drug be alcohol, opium, or Indian hemp is immaterial. Cases involving a question of this kind are not very common in England. At the Chelmsford Autumn Assizes, 1861 (*Reg.* v. *Weaver*), a woman was charged with the murder of a child by strangulation. It appeared that this woman had perpetrated the act without any obvious motive, and it was proved that at the time she was in a half-stupefied or unconscious state. She was in the constant practice of taking laudanum, and she had taken a large dose on the morning of the day on which the child was destroyed. It was suggested in defence that she was in such a state of mind as not to be responsible, but the jury convicted her of the murder. Unless there is proof of confirmed disease of the brain as a result of the practice, a person committing a crime while under the influence of drugs voluntarily taken, will no doubt be held as responsible for the results as if he were sane.

Restraint. Interdiction.—Drunkenness, even when habitual, is not a suf-

ficient ground for the imposition of restraint or interdiction in the English law. Thus, on a Commission in November 1836 (*Re Holden*), a jury returned that the party was of weak mind and given to habits of drunkenness, but that he was not of unsound mind. On application, the Lord Chancellor refused to interfere. This part of our law requires revision.

The case of *Mrs. Armstrong* (Queen's Bench, February 1858) presents some features of interest in reference to the alleged mental unsoundness of drunkards. The defendant, a lady æt. 58, had been declared of unsound mind by a Commission in August 1857. In September she escaped, and went to France: she returned to this country in January 1858, and endeavoured to set aside the verdict of unsoundness by these proceedings. It appeared that her father had bequeathed to her by his will two thousand pounds per annum, to be paid to her monthly by trustees. The evidence at the trial showed that she was ill-educated, ignorant, and naturally of weak mind, amounting, according to some of the witnesses, to imbecility. For about ten years she had given way to habits of excessive drinking, and these habits, according to the evidence for the Crown, had still further weakened her intellect. She had been confined four times in lunatic asylums, and her unsoundness of mind had been certified by Drs. Arnott, Conolly, Forbes Winslow, and others.

On the part of defendant it was contended that her mind was sound, except when she gave way to drunkenness, and that by the cessation of this habit she would be perfectly sane and competent to manage herself and property:—further, that a mere drunkard could not and ought not to be deprived of his civil rights, unless it was proved that his mind had become permanently disturbed by his vicious habits, and this it was contended had not been proved of the defendant. Dr. Conolly, however, testified that, although she was a year under his supervision without any access to drink, her mind was still unsound. It appeared also that she had no control over herself in this respect: for when she escaped to France it was proved that she still drank brandy to excess, and for a month was drunk almost daily. Drs. Monro, Baly, Wood, and myself saw this lady on several occasions previous to the trial, for the purpose of testing her state of mind. We found her weak-minded, evasive, untruthful; and although sober at the time of our visits, it was clear from her admissions that she still drank wine and spirits in excess. She denied that she had ever been insane; and admitted that, although she had hoarded 3,200*l.* in sixteen months, she had not paid her tradesmen's bills, and had incurred a large debt at an hotel for which an action had been brought against her husband. She refused to give any account of the disposal of her money, or to furnish any explanation in reference to the large sum accumulated.

Having heard at the trial the evidence respecting her unsoundness previous to the inquisition, and having remarked an entire absence of proof that this had been removed when she was left to her own control, Drs. Monro, Baly, and myself came to the conclusion that from original weakness of intellect, aggravated by habits of drinking, she was still of unsound mind and incapable of taking care of herself or her property. Upon this declaration no witnesses were called for the defence; and the jury, who had an interview with the lady, returned a verdict that she was of unsound mind,—two out of the twelve stating that her mind was sound, but that she was incompetent to manage her affairs on account of her habitual drunkenness. These two jurors therefore considered that she was a dipsomaniac. If this view were correct, she ought to have been discharged, as such persons are not subject to restraint or interdiction by the English law. There was no evidence, however, to show that *she had* recovered, while there was evidence that abstinence from drink at a *former period* had not led to her recovery. These dissentients must have

based their opinion on their own personal judgment of her condition after a short interview.

An excessive indulgence in habits of drinking does not necessarily derange the mind, but it practically renders a person unfit for the control of himself and the management of his property. It is therefore a question whether it would not be for the benefit of such persons and of those dependent on them if the law interfered, and placed them under the same restraint as those whose minds had been actually rendered unsound by this pernicious habit. For a case of dipsomania as observed by Dr. Liman, of Berlin, see Casper's 'Vierteljahrs.' 1865, 1, 168.

DELIRIUM TREMENS.

This is a disordered state of mind which proceeds from an abuse of intoxicating liquors. Habitual drunkenness appears to be the predisposing, while abstinence from drink is the immediately exciting, cause. Thus, the disorder frequently does not show itself until the accustomed stimulus has been withdrawn for a certain period. It commences with tremors of the hands, by which it is known from ordinary delirium, and restlessness; and the individual is subject to hallucinations and illusions, sometimes of a horrible kind, referring to past occupations or events. The patients are often violent, and prone to commit suicide or murder—more commonly the former; hence they require close watching. Persons labouring under this disorder are incompetent to the performance of any civil act, unless the mind should clear up before death; they are not responsible for criminal acts committed while they are labouring under an attack. Acquittals have even taken place on charges of murder, when there was deliberation as well as an apparent motive for the act. Thus then, although this disorder may have been voluntarily brought on by habitual drunkenness, the law admits it as a sufficient plea for irresponsibility, while in a case of confirmed drunkenness it rejects the plea. In delirium tremens there is a formed disease of the brain, while voluntary drunkenness merely produces a temporary disturbance of its functions. A trial has taken place in which the evidence showed that homicide had been committed by the accused while labouring under an attack. (*Reg.* v. *Simpson*, Appleby Summer Assizes, 1845.) The prisoner's mind had become unsettled from this disorder, brought on by habitual drunkenness. In another case the plea was also admitted by the jury, although it was scarcely supported by the medical evidence. (*Reg.* v. *Watson*, York Winter Assizes, 1845.)

SOMNAMBULISM.

This term applies to sleep-walking, but the medico-legal facts are chiefly confined to acts of violence perpetrated unconsciously during the state of sleep, in which it is presumed that malice and intention, the chief ingredients of crime, are wanting. It has been a contested question among medical jurists, how far a person should be held responsible for a criminal act perpetrated in that half-conscious state which exists when he is suddenly roused from sleep. There is no doubt that the mind is at this time subject to hallucinations and illusions, which may be more active and persistent in some persons than in others; but it is difficult to suppose, unless we imagine there is a sudden access of insanity, that a person should not recover from the delusion before he could perpetrate an act like murder. A remarkable case of this description, that of *Bernard Schedmaizig*, will be found reported by Marc. (Op. cit. vol. 1. p. 56.) This man suddenly awoke at midnight, and saw before him, as he believed, a frightful phantom. He twice called out, 'Who is that?' and receiving no answer, and imagining that the phantom was advancing upon him,

he seized a hatchet which was beside him, attacked the spectre, and it was found that he had murdered his wife. He was charged with the murder, but pronounced 'not guilty' on the ground that he was not at the time conscious of his actions. A trial involving this question occurred in England. A pedler in the habit of walking about the country armed with a sword-stick, while lying asleep on the highroad, was roused by a man accidentally passing, who seized and shook him by the shoulders. The pedler suddenly awoke, drew his sword and stabbed the man, who soon afterwards died. The pedler was tried for manslaughter. His irresponsibility was strongly urged by his counsel, on the ground that he could not have been conscious of an act thus perpetrated while in a half-waking state: this defence was supported by the opinion of a medical witness. The prisoner was, however, found guilty. Under such circumstances, it was not unlikely that an idea had arisen in the prisoner's mind that he had been attacked by robbers, and therefore had stabbed the man in self-defence. (*Rex* v. *Milligan*, Lincoln Autumn Assizes, 1836.) The following remarkable case is quoted by Mr. Best.—Two persons who had been hunting during the day slept together at night. One of them was renewing the chase in his dream, and imagining himself present at the death of the stag, cried out 'I'll kill him!—I'll kill him!' The other, awakened by the noise, got out of bed, and by the light of the moon beheld the sleeper give several deadly stabs with a knife on that part of the bed which he had just quitted. Suppose a blow given in this way had proved fatal, and the two men had been shown to have quarrelled previously to retiring to rest! ('Presumptions of Law and Fact.') A defence of this kind may, however, be unduly strained. Thus when there is enmity, with a motive for the act of homicide, the murderer, while sleeping in the same room, may select the night for an assault, and perpetrate the act in darkness in order the more effectually to screen himself. In *Reg.* v. *Jackson* (Liverpool Autumn Assizes, 1847), it was urged in defence that the prisoner, a woman who slept in the same room with the prosecutor, had stabbed him in the throat, owing to some sudden impulse during sleep; and the case of *Milligan* (above given) was quoted by the learned counsel in support of the view that the prisoner was irresponsible for the act. It was proved, however, that the prisoner had shown malicious feeling against the prosecutor, and that she had wished him dead. The knife with which the wound had been inflicted bore the appearance of having been recently sharpened, and the prisoner must have reached over her daughter (the prosecutor's wife), who was sleeping in the same bed with him, in order to inflict the wound. These facts were adverse to the supposition of the act having been perpetrated in a state of unconsciousness in awaking from sleep, and the prisoner was convicted. In *Reg.* v. *Minchin* (Cent. Crim. Court, June 1853), in which a young woman was charged with having wounded the prosecutor during the night, the same plea was put forward but rejected. There was nothing to show that the prisoner was not aware of what she was doing. There was an absence of motive, but, as it has been elsewhere stated, this alone does not create irresponsibility. In another case (*Reg.* v. *French*, Dorset Autumn Assizes, 1846) it was proved that the prisoner, while sleeping in the same room, had killed the deceased, who was a stranger to him, under some delusion. There was, however, clear evidence that the prisoner was insane, and on this ground he was acquitted under the direction of the judge. In *Reg.* v. *Byron* (Winchester Winter Assizes, 1863), it was proved that a blow struck by a drunken person during sleep had caused death. The man was charged with manslaughter, under the following circumstances:—The prisoner and deceased were soldiers in the same regiment, at Aldershot. The prisoner was in the street drunk, and deceased seeing this took him in, to prevent his being arrested for drunkenness,

and placed him on his bed. In this state he lay for some time quite drunk and insensible. In the course of the afternoon deceased went upstairs to see him; he tried to awaken him, when the prisoner suddenly kicked out, and his boot came violently against the lower part of the abdomen of deceased. The prisoner did not awake, but appeared then to be quite insensible. The deceased died, and it was found that the blow had caused rupture of the intestines. As in order to constitute the crime of manslaughter, it must be shown that the person charged did something knowingly, and the prisoner was not in a state to have known anything, it was held that there was no case against him, and he was acquitted. The act was committed during sleep, but the sleep appears to have been the result of voluntary drunkenness.

Somnambulism may become a subject of discussion under a contested policy of life-insurance, in which it may be provided that it shall be vitiated by suicide. If a man falls from a height and is killed while in a state of somnambulism, would this be considered an act of suicide within the meaning of the policy? The proviso against suicide has been held to include only *intentional* killing (case of *Borradaile* v. *Hunter*, p. 498 *ante*; also 'Med. Gaz.' vol. 36, p. 826), and in death under these circumstances the killing cannot be said to be intentional: it can only be regarded as an accident—therefore it is reasonable to infer that the policy would not be void. It is impossible, however, to lay down any general rules relative to cases of this description; since the circumstances attending each case will sufficiently explain how far the act of murder or suicide had been committed during a state of somnambulism, or under an hallucination continuing from a state of sleep.

THE DEAF AND DUMB.

It was formerly laid down in the old law-books that a person born deaf and dumb was by presumption of law an idiot, but in modern practice, want of speech and hearing does not imply want of capacity either in the understanding or memory, but only a difficulty in the means of communicating knowledge; and when it can be shown that such a person has understanding, which many in this condition reveal by signs, he may be tried, and suffer judgment and execution. (Archbold.) A deaf-and-dumb person is not incompetent to give evidence, unless he is also blind; he may be examined through the medium of a sworn interpreter who understands his signs. This condition does not justify restraint or interdiction, unless there is at the same time mental deficiency. A deaf-and-dumb person who has never been instructed is altogether irresponsible for any action, civil or criminal. Such a person cannot even be called on to plead to a charge, when there is reason to suppose that he cannot understand the nature of the proceedings. A deaf-and-dumb woman was charged with cutting off the head of her child. By signs she pleaded 'not guilty,' but she could not be made to understand the nature of the other proceedings against her. Upon this she was discharged, and subsequently confined as a criminal lunatic. In *Reg.* v. *Goodman* (Stafford Summer Assizes, 1841) a deaf-and-dumb man was convicted of theft and sentenced to imprisonment. He was made to comprehend the proceedings by signs and talking with the fingers. In *Reg.* v. *Brook* (Buckingham Summer Assizes, 1842) the prisoner could read and write well. He was charged with feloniously cutting and stabbing. The proceedings were reported to him in writing. He was convicted, and the judge (Alderson, B.) having sentenced him to a year's imprisonment, handed down his judgment in writing, which he recommended him to read and ponder over in prison! In *Reg.* v. *Jackson* (Bedford Summer Assizes, 1844), Alderson, B., held that before the evidence of a dumb witness can be received, the Court must be satisfied that he understands the obligation of an oath.

It has been decided in the Ecclesiastical Courts that the consent of a deaf-and-dumb person given by signs, renders a matrimonial contract valid, provided the person has a full and proper understanding of their meaning. An incompetency to enter into contracts or unsoundness of mind must not be inferred to exist merely in consequence of a person being deaf and dumb. In the case of *Harrod* v. *Harrod* (Vice-Chancellor's Court, June 1854), an attempt was made to deprive the plaintiff of his rights on the ground that he was an illegitimate child. The marriage of his parents took place thirty years previously, but the marriage was said to be void by reason of the alleged incapacity of his mother to enter into the contract; the mother was deaf and dumb, and of more than ordinarily dull intellect. Sir W. P. Wood said there was an important difference between 'unsoundness of mind' and 'dulness of intellect.' The presumption in such cases was always in favour of sanity, and the fact of a person being deaf and dumb did not raise a presumption the other way. Experience in asylums showed that the deaf and dumb were not necessarily of unsound mind. The woman had assented to the marriage in form and substance, and with a perfect knowledge of what she was doing. In the ceremony of marriage it had never been held that the repetition of the words was necessary. The woman conducted herself with great propriety before and after the marriage, and a child was born in due course. There was no ground for an issue.

Feigned deafness and dumbness.—From these statements it will be perceived that medical evidence is of but little importance in relation to the deaf and dumb. Indeed, there are only two cases in which this kind of evidence is likely to be called for—1st, when there is accompanying *mental deficiency*, in which case the general rules elsewhere given are applicable (*ante* p. 503); and 2ndly, when there is a suspicion that the deafness and dumbness are *feigned*. There will be no great difficulty in detecting an imposition of this kind. It may be found that the alleged deafness and dumbness did not come on until a motive for feigning existed, and that there was no apparent cause but the very suspicious one of evading responsibility for some offence committed. The use of ether or chloroform-vapour may be occasionally resorted to with advantage for the detection of such an imposition. In one instance a strong shock of the induced current from a large magneto-electrical apparatus, by means of moistened conductors applied over the larynx, brought out after a few minutes the power of speech in a lad who had successfully imposed on many persons. ('Med. Times and Gaz.' March 30, 1861, p. 339.) It requires great skill to maintain an imposture of this kind. Such persons are immediately thrown off their guard by addressing them in a voice a little above or a little below the common conversational tone; a change in the eye or the features will at once indicate that they hear and understand what is said. An ignorant impostor may be dealt with on the principle of '*artis est celare artem*,' by seriously proposing in a low voice to a medical friend who may be present the necessity for the performance of some formidable surgical operation. The production of amputating instruments has been known to have a wonderful effect! On one occasion a pauper feigning deafness and dumbness was detected by the production of a case of surgical instruments during a consultation between two surgeons as to the immediate performance of an operation upon him.

In *Reg.* v. *Yaquierdo* (Herts Summer Assizes, 1854) the prisoner, who was charged with wilful murder, was found by the jury to be wilfully mute. The man refused to plead, although it was obvious that he was well aware of the nature of the proceedings. No counsel could be assigned to him, as this could not be done without the prisoner's consent. He was convicted and sentenced. Dr. Wilson mentions the case of an impostor who had succeeded in convincing all around him that he was completely deaf. His medical attendant prescribed for him *daily extra* wine and other articles of diet, but in reality he ordered that none

of them were to be supplied. The consequence was that while the patient was nominally living on the fat of the land, he was actually suffering from hunger. At last the surgeon remarked aloud that he could not understand why the patient seemed to be losing flesh with such a diet. This proved too much, and the pretended deaf man, in an unguarded moment, indignantly exclaimed to the nurse, 'You know I have never had any of those good things.' (Lancet, 1872, 1, p. 93.)

If the impostor can write, he may perhaps be detected by the ingenious plan adopted by the Abbé Sicard. When the deaf and dumb are taught to write they are taught by the eye. The letters are only known to them by their form, and their value in any word can be understood only by their exact relative position with respect to each other. A half-educated impostor will spell his words, or divide them incorrectly; and the errors in spelling will always have reference to sound—thereby indicating that his knowledge has been acquired through the *ear*, and not alone through the eye. A man who had defied all other means of detection wrote down several sentences, in which the misspelling was obviously due to errors produced by the *sound* of the words; the Abbé pronounced the man to be an impostor without seeing him, and he subsequently confessed the imposition.

LIFE-INSURANCE.

CHAPTER 100.

PRINCIPLES OF LIFE INSURANCE—QUESTIONS PROPOSED TO PERSONS WHO INSURE THEIR LIVES—MEDICAL QUESTIONS—WHAT DISEASES HAVE AND WHAT HAVE NOT A TENDENCY TO SHORTEN LIFE ?—LEGAL DECISIONS RESPECTING THE MEANING OF THESE WORDS—CONCEALMENT OF DISEASES—WHAT IS MATERIAL CONCEALMENT ? —CONCEALMENT OF HABITS—WHAT IS INTEMPERANCE ?—PROXIMATE AND REMOTE EFFECTS—DELIRIUM TREMENS—EPILEPSY—PHTHISIS—ABSTINENCE—VEGETARIANISM—OPIUM-EATING—INVETERATE SMOKING—INSANITY—VOIDANCE OF POLICIES BY SUICIDE—SECRET POISONING OF PERSONS WHOSE LIVES ARE INSURED.

THE subject of Life Insurance in a medico-legal view has been up to the present time almost peculiar to the medical jurisprudence of Great Britain. This arises from the great extent to which insurances on lives are effected in this country, and from the peculiar nature of the provisions which regulate contracts of this description. M. Tardieu states that within a recent period the principles of life-insurance have been greatly extended in France, and that there are now from seventy to eighty companies established in Paris. ('Ann. d'Hyg.' 1866, 1, 386.)

The insurance of a life is a contract whereby the insurer, in consideration of a certain sum of money, called a *premium*, either in a gross sum or in periodical payments—proportioned to the age, sex, profession, health and other circumstances of the person whose life is insured—undertakes to pay to the person for whose benefit the insurance is made, a stipulated sum or an equivalent annuity, upon the death of the individual whose life is insured, whenever this event shall happen if the insurance is for the *whole* life; or, in case this shall happen within a certain period, if the insurance is only for a limited time.

The deed by which this contract is made is called a *policy*, and it is concerning the stipulations of the policy, and the meaning to be put upon certain medical terms used in it, that litigation commonly arises. The amount of premium payable will be regulated by the *mean expectation* or duration of life of the individual; and this it is well known is not only different at different ages, but is greater at certain periods of life among women than among men. One fact, however, is certain,—the most successful Insurance Offices have considerably underrated the probability or expectation of life among adults, and thus have derived enormous profits by demanding higher premiums on the insured than a fair view of the average rate of mortality would justify. The calculations of some of the older Offices were based on what is called the Northampton Table, which represents in an exaggerated degree the mortality not only of the class of persons who commonly effect insurances, but of the entire population. This table has been thus improperly applied to determine the mortality of men in the middle classes, holding the most durable tenure of life. Besides this, as *Mr. Edmonds* has shown, some of the Offices have entirely excluded from in-

surance the sick class, out of which the greater part of the mortality indicated in the table necessarily takes place. By excluding the sick, and requiring strong medical certificates respecting the condition of healthy applicants, it follows that the mortality among the insured falls immeasurably short of that which is indicated by the ordinary Tables of Mortality from which the amount of premium is really calculated.

The sum for which a person's life has been insured cannot be recovered until after the death of the person and distinct proof of death. Those who would benefit by the death must prove the fact of death when this is open to doubt. In another part of this work (vol. 1, p. 166) a case is reported in which a claim was made on an Insurance Company for the amount of a policy on the life of a man who suddenly disappeared, while at Brighton, within a week after an insurance had been effected on his life. The man's clothes were found on the beach, and the jury were asked to infer from this fact that the man was drowned while bathing, and that his body had been carried out to sea. No one had seen him go into the water. The jury were discharged without a verdict. It was quite possible that the clothes had been designedly placed there, and that the man had gone off in another direction, and was then living.

Different rules have been given by actuaries for calculating the expectation or duration of life at different ages. It is difficult to test their accuracy, except in reference to large numbers of persons living under similar circumstances, and for these groups of the population, statistics do not fairly provide. Age is the point from which nearly all the Tables of Mortality start, without reference to health, trade, occupation, or social position. One of the most simple of these rules for calculating the duration of life from 5 to 60 years has been given by Willich: he considers it to be equal to two-thirds of the difference between the age and 80. Thus, in a man 20 years of age this difference is equal to 60, and two-thirds of this are equal to 40, the probable duration of life for a person of average health at 20. Each Office has its own rules for calculating the amount of premium to be paid by the person who effects an insurance. As Insurance Offices are very numerous and their profits are large, it is obvious that their calculations must be very much in their own favour. The expectation of life in the insured is ordinarily much greater than they assign to it; at the same time the amount payable in the form of premium is kept down by competition.

With respect to the influence of *profession*, a higher premium is demanded by some Offices for the insurance of the lives of persons whose occupations expose them to great risk—as, for instance, of persons actually engaged in military or naval service. The rule adopted with respect to professions in one of the best London Offices is as follows:—'No extra premium is required from any person in the Army or Navy unless on actual service, but the assurance will be void if the party whose life is assured, enter into any naval or military service whatever, unless by consent of the Directors endorsed on the policy.'

Above all other conditions, *the general state of health* of the person is likely to have a most important influence on the mean duration of life; and it is here that medical science lends its aid—1st, by showing how far a contract may be safely entered into when the person is affected with disease; and 2ndly, by showing whether a diseased state of the body really existed in the person insured, although at the time of insurance it may have been alleged that he was healthy and free from disease.

By improved methods of diagnosis, the existence of disease under a proper examination is easily made known, or it may be at once inferred from symptoms described by non-professional persons. Then, again, the influence of particular diseases in shortening life is now so much better understood than formerly, that numerous Offices have of late years been especially established

for the insurance of *diseased* as well as of healthy lives, the amount of premium being of course regulated by the nature of the disease and the degree to which it may have advanced. In these cases lives are insured as if the persons had reached a greater age, the amount paid being calculated on the theory that the person is ten, fifteen, or twenty years older than he really is.

As in the case of all civil contracts the law requires that there should be a strict compliance with the conditions by each party, it follows that, if any fraud has been committed by the insured—if he, or those to whom he trusted in his dealings with the Office, have concealed from the insurers the existence of any disease under which he was at the time labouring, or any symptoms indicative of a probable attack of disease—or if he or they have knowingly and wilfully misrepresented or misdescribed his actual bodily condition, then the contract will be void, and the amount of the premiums forfeited. This forfeiture is a usual condition in the policy. Actions on policies of life-insurance are not unfrequent; and, unfortunately, the medical evidence given on these occasions, as in cases of insanity, is of a very conflicting character. This is by no means creditable to the profession, for it either proves the existence of great bias in the witnesses, or that medical rules are devoid of all certainty, and are therefore practically useless. One of the evils of these professional conflicts is, that juries are discharged without verdicts, and both parties are put to great expense. In another part of this work (Vol. 1, page 32) some observations have been made on the testimony of medical experts in reference to life-insurance and other subjects requiring the opinions of skilled medical witnesses.

In a case of life-insurance an action is never likely to be brought for the recovery of the amount of a policy, except when there is reason to believe that a wilful fraud has existed in the contract. Juries always regard such actions with disfavour; and while judges interpret the law strictly, the onus of proof is entirely thrown upon the Offices. Hence the insured are placed in a very advantageous position. These actions in nine cases out of ten depend upon the construction put on the medical terms of the contract; hence it is our duty to see how medical defects are likely to arise in reference to the policy. The conditions of insurance vary in different offices. The following are taken from the papers issued by one of the principal London Offices:—

Questions.—The name, residence, and profession of the party whose life is to be assured? Place of birth? Date of birth? the — day of —. Age *next* birthday — years'? (*Proof should be furnished.*) Married or single? Sum to be assured, £ . Term for which the assurance is required? Have you ever been afflicted with gout, rupture, asthma, fit or fits, spitting of blood, or any other disease or disorder which tends to shorten life? Have you had the smallpox, or been vaccinated? Have any of your relatives died of consumption? Are you now, and have you always been, of temperate habits of life? Are you employed in any naval or military service? State if there be any other material circumstance touching your past or present state of health or habits of life to which the foregoing questions do not extend. Name and residence of your usual medical attendant? Has attended me — years? Name, residence, and profession of TWO friends well acquainted with your health and habits of living? Has known me — years. Has known me — years. Has a proposal ever been made on your life at any other office or offices? If so, where? Was it accepted at the ordinary premium? or at an increased premium? or declined? I, the abovenamed, ——, do hereby declare that the foregoing statements, and the answers and replies made by me to the several above-mentioned questions and requisitions, and each and every of them, is and are true in substance and matter of fact. And that I have not omitted or

concealed any fact, matter, or thing in anywise touching or affecting my state of health, constitution, or habits of life. And I also declare, that it is expressly understood and agreed between myself and the Company, that the foregoing particulars, statements, and this declaration are to be considered and taken as the basis of the contract of assurance between me and the Company for this assurance. And in case the foregoing particulars, statements, and declaration be untrue, or contain any untrue averment, the policy of assurance effected in pursuance thereof shall, in any or either of such cases, be absolutely null and void, and the premiums paid thereon shall become and be absolutely forfeited to the Company, and not be receivable or recoverable by me or by my representatives. Dated the — day of — 186—. Signature of the person .

The following questions are submitted to the usual medical attendant of the person whose life is proposed for insurance:—1. How long have you known him? 2. Are you his usual medical attendant? and have you seen him with reference to this report? 3. When was he last ill? and what have been the nature and duration of the complaints for which you have attended him? 4. Has he to your knowledge, or have you reason to believe that he has had, any giddiness, or affection of the head, or any particular determination of blood to the head; or has he suffered from apoplexy, palsy, epileptic or other fits, or other disease of the brain, or from insanity? 5. Has he ever suffered from pulmonary disease? from habitual cough, shortness of breath, spitting of blood, asthma, inflammation, or other disease of the lungs, or from disease of the heart? 6. Has he ever had dropsy, inflammation, or severe disease of the bowels, disease of the liver, of the kidneys, or other urinary organs, or any affection of the alimentary canal? 7. Has he had gout or rheumatism? If so, in what form? and have the attacks been frequent? 8. Has he ever been affected with hernia? If so, in what situation? Is it reducible? And does he wear a truss? 9. Has he had any serious wound, hurt, or other accident, causing any bodily infirmity? 10. Do you consider he is now in perfect health? 11. Has he been, and is he now, habitually sober and temperate? 12. Is he of active or sedentary habits? 13. Does his occupation expose him to the chances of disease? 14. Have his parents been healthy and long-lived, or otherwise? 15. Have any of his near relatives died of consumption or any hereditary disease? 16. State any material circumstance touching his health or habits, to which the foregoing questions do not extend, which may affect the eligibility for life assurance. Dated this — day of — 186—. Signed ———.

In order to show the searching nature of these inquiries, and how one set of answers is made to act as a check upon another, it is only necessary to refer to the following list of queries which are put to private individuals acquainted with the person. This paper is to be filled up and transmitted with a proposal for life-insurance:—

State whether you have been acquainted with the person whose life is proposed to be insured, and how long. Whether you have ever known or heard of his being ill, and, if so, state the time of the illness and nature of the complaint. Whether he is at this time, to the best of your knowledge and belief, in perfect health. Whether his *habits* and manner of living are temperate and regular. (You will be pleased to direct your particular attention to this subject of inquiry.) Whether his appearance indicates health and a good constitution. Whether there is any, and what, apparent defect in the formation of his person. When you last saw him. Whether he is in person thin or middle-sized, stout, or bloated. Whether his complexion is pale, sallow, brown or florid. Whether he is married or single. Whether he has had any

brothers or sisters. If so, how many; the number now living; the ages at which the others have died, and the cause of their decease. Ascertain and state whether his parents are living, and, if not, the age at which they have died, and the causes of their death; communicate all the information you can acquire as to the health and longevity of his other relatives; also whether any of them have died of consumption, or have been subject to fits or mental derangement. Whether the persons referred to, respecting the life to be insured, are worthy of credit; and whether the medical referee is the usual medical attendant of the party. Whether you consider the life in question in all respects safe and proper to be insured by the Company upon ordinary terms, and whether you recommend the same to the Directors as such. Ascertain if the life has been proposed in any other Office, and if so, whether declined or taken. If the insurance is proposed by one party on the life of another, endeavour to learn and state the object for which it is intended.

In the Edinburgh Life Office the following particulars are required from any one proposing his life for insurance. As they have been just issued (1873) they represent the most recent form which such inquiries take.

Name, residence, occupation or designation. 1. State place and date of birth, and age next birthday. Note—The age will be admitted on the policy if the date of birth be satisfactorily proved by such evidence as (1) an extract from the register of births, or (2) a certificate of baptism which gives the date of birth, or (3) an extract from a family register, such as is often made in a Bible. In the event of evidence of age not being furnished during the currency of the policy, it will be open to the directors to require it previous to making payment of the claim. 2. State sum to be assured, and whether with or without profits, and if for life or a term of years. 3. State whether the premium is to be paid yearly, half-yearly, or quarterly, while the policy exists, or during a limited number of years. 4. What is the present and general state of your health? 5. State the nature of any illnesses or personal injuries from which you have suffered, when they occurred, and what medical practitioners attended you. 6. Have you consulted any medical man within the last five years? and if so, give his name and address, and state for what ailment you consulted him. 7. Have you had smallpox or been vaccinated? 8. Are you strictly temperate in the use of stimulants? 9. Have you always been strictly temperate? 10. Are your occupation and mode of living in all other respects conducive to health? Have they always been so? 11. State the following particulars regarding your parents,—their ages if living: if dead, their ages at the time of death: also the cause of death. 12. State the number of your surviving brothers and sisters, and as nearly as you can the ages of the eldest and the youngest. 13. If any of your brothers or sisters are dead, state as nearly as you can the ages at which they died, and the causes of death. 14. If any of the members of your family are in delicate health, state as nearly as you can their ages and the nature of their complaints. If consumption has manifested itself in any member of the family, it will be desirable to state as far as possible the ages and causes of death of the uncles and aunts and grand-parents on both sides of the house. 15. Have any of your relatives suffered from consumption, scrofula, cancer, heart-disease, gout, insanity, or other hereditary disease? 16. Have you ever previously made a proposal for assurance, and to what office or offices? 17. If so, was the assurance on every occasion effected at the ordinary premium—or was it ever effected at an increased premium? 18. Or was it ever declined, and by what office or offices? 19. Have you resided beyond the limits of Europe? If so, state when, where, and how long. Did your health suffer? 20. Have you any prospect or intention of going abroad? 21. Give the names and addresses of two intimate friends (not interested in the assurance), for the purpose of re-

ference, and state how long you have been known to them. 22. Name and address of the person in whose favour the policy is to be granted. The proposer appends the following declaration:—I, the said —— (the person whose life is proposed to be assured) do hereby declare that what is above stated, and what is declared in the replies made or to be made by me to the medical officer of the Company, contain a true statement of every particular thereby required to be set forth; and I (the person in whose favour the policy is to be granted) do hereby agree that the information already referred to shall be the basis of the contract betwixt me and the Edinburgh Life Assurance Company, and if it shall hereafter appear that any information has been withheld, or that any of the matters set forth have not been truly and fairly stated, then all monies which shall have been paid on account of the assurance made in consequence hereof shall be forfeited, and the assurance itself shall be absolutely null and void. (Signature of the person whose life is to be assured.) Signed by me at .

No one can blame Insurance Offices for putting these searching inquiries and acting with rigour. Frauds of the worst description (see p. 641) have been frequently attempted upon them, and it is only by the adoption of a searching set of inquiries that they can protect themselves.

The chapter on life-insurance in the first edition of this work has been translated by M. Tardieu with numerous additions. ('Ann. d'Hyg.' 1866, 1, 383, and 2, pp. 120 and 382.) Among them he gives copies of the questions to which answers are required by many French, German, and Spanish Offices. They do not materially differ from those above given, but the more recent Offices have evidently profited in this respect by the experience of the older institutions in Great Britain. Dr. Gmelin, of Stuttgart, has collected the formularies of questions put by fifteen different offices, chiefly German, to the medical attendant of the intending insurer. He finds that they vary from a minimum of ten to a maximum of thirty-two questions. He divides them into superfluous, indiscreet, irrelevant, and misleading. (Eulenberg, 'Vierteljahrs.' 1872, 1, 271.) From the minuteness of some of these inquiries it appears that a much more difficult duty is thrown upon German than upon English medical practitioners. According to M. Tardieu, some French Companies act on a more reasonable plan, and leave the medical attendant perfectly free to draw up a certificate according to his own views. ('Ann. d'Hyg.' loc. cit.)

The relations of Medical Men with Insurance Offices—Medical responsibility.—The practice with some Offices of obtaining a certificate gratuitously from the medical attendant of the person proposing to insure his life, is one great source of litigation. The responsibility of causing the life to be accepted or rejected is thus thrown entirely upon the usual medical attendant of the person; for, as we shall see hereafter, an application for a certificate from a medical practitioner, who is a stranger, is very likely to be treated as a fraud and may lead to the disputing of the policy. The medical attendant of the person, it is true, is the only individual who can properly certify to the real state of *previous* health, and therefore to him an application is generally made. He is sometimes expected to furnish an important certificate of this kind gratuitously; and should it happen to be unfavourable, he is exposed to the risk of losing what may probably be a lucrative portion of his practice: for I shall not suppose that any member of the profession would certify to what he knew to be untrue in order to retain a patient. The question is, whether an Insurance Office has a right to place a medical man in such a responsible position as this. In the issuing of a policy the insurers and insured are equally benefited, for the contract would certainly not be made except upon a supposition of reciprocal

advantage. The medical attendant, without whose sanction the policy could not in all cases be properly effected, not only derives no benefit, but is actually exposed to the risk of loss for performing in an honourable and conscientious manner an invidious duty thus forced upon him. Such a state of things ought not to be. Many actions for the recovery of disputed policies have shown most clearly that the practice leads to great carelessness and indifference on the part of medical men in drawing up these certificates; and this produces in the end a more serious loss to the representatives of the insured than if the life had not been accepted. It must be remembered that the insurers do not suffer by any misconduct on the part of a medical man who signs such a certificate, but the representatives of the insured; hence the Offices show no disposition to amend this vicious system. It is always professed that such communications are confidential; but in more than one instance medical men have found that the contents of their certificates have become known to their patients, and have even been publicly used as evidence in Courts of Law. A partial remedy would be, that the medical attendant of the party should not be called upon to sign a certificate at all, but that this should be done only by a medical referee of the Office after a regular professional consultation with the medical attendant, and a proper examination of the person. If the life were rejected, the onus of rejection would be on the proper person, the appointed referee; and if accepted, he would be properly made responsible to the Office for any gross negligence in the performance of his duties. It is true that there are few Insurance Offices which have not consulting physicians and surgeons attached to them; but the weight of responsibility in contested suits does not rest with these officers so much as with the medical attendants of the insured. The subject of the relations of medical men to Insurance Offices has been ably handled by various writers in reference to the serious question of responsibility. Some have looked at it only in a financial point of view, *i.e.* in reference to the payment of fees and the amount of remuneration to be paid to the medical attendants of persons proposing their lives for insurance. (See a paper by Dr. Hopf of Gotha, 'Vierteljahrs.' 1870, 1, 274, also a criticism on that paper by Dr. Gmelin of Stuttgart in the same journal for 1872, 1, 271). Others, like M. Tardieu, have taken a broad and ethical view of the subject, and have put the question prominently forward, whether it is justifiable to extract from a medical man information on matters which have been confided to him by his patients. ('Ann. d'Hyg.' 1866, 1, 420.)

M. Tardieu considers that it would be proper in all cases that the Company should dispense with a certificate from the medical adviser of the person proposing, and rely upon the examination and report of their own medical referee. Medical responsibility would thus be fixed in the right quarter, but the question then arises, 'Could the Insurance medical officer obtain by one or two interviews that amount of information in regard to previous habits and general health which would be considered indispensable in apportioning the risk?' A lady in one of her confinements may have had, as a sequence, rupture of the perineum, or prolapsus of the uterus. Should her medical attendant be compelled to give information on these and other matters of an equally delicate nature? Undoubtedly they are such conditions of body as would influence the risk, and the concealment of them might nullify the insurance. A case will be related hereafter (p. 619) in which, owing to concealment of a rupture of the perineum, and the surgical treatment to which it led, a policy on the life of a lady was set aside. If a medical man, in undertaking to answer the questions put by Insurance companies, concealed such matters, his certificate would be worse than useless. He would not only cause the policy to be vitiated on the death of the insured, but by so acting he would lead to the loss of all the premiums. If he declined to answer the questions he would throw the re-

sponsibility on his patient, who might not know the importance of revealing such matters, or might be ignorant of the true nature of the malady from which she had suffered or was still suffering. A question might arise in reference to a private patient whether he was labouring under syphilis. No medical man in attendance would like to reveal the existence of such a disease without being authorized; and the best course to take is to inform the patient that he must communicate his real present and past condition to the medical referee of the Office, if he wishes his heirs to avoid future litigation, leading to the possible loss of the policy and premiums.

In the event of a medical practitioner being called upon to sign a certificate of this kind, it appears to me that the safer course would be that he should decline the proposal, except upon a professional consultation with the medical officers appointed by the insurers. If, however, from private considerations, he is compelled to sign the certificate, it is his duty to use the greatest caution, not merely in returning answers to the formal questions on the paper, but in detailing *all particulars known to him respecting the state of health of the person.* In acting otherwise, he would be doing the greatest possible injury to the representatives of the insured, and probably damage his own reputation. There is no intermediate course: the duty must either be performed carefully, conscientiously, and honourably, or it must be declined altogether. It is a fallacy to suppose that any equivocation or concealment in the declaration can escape detection; and yet, from the evidence which has been given on some trials, it is probable that such an idea had existed in the mind of the medical attendant who attached his name to the certificate.

M. Tardieu, after giving some examples of fraud perpetrated on the French Offices by the aid of certificates from medical men acting for the insured, suggests, as a remedy for many of these evils, that the medical attendant of the person proposing to insure his life should be free to act as he pleases in giving or withholding information. English practitioners already have this privilege, for no Office can compel them to answer any of their inquiries. The only effect of a refusal would be that the application of a patient to insure his life would be rejected by the Office, and this might lead to his consulting a more pliable medical practitioner. M. Tardieu observes further that all should be entrusted to the medical referee of the Company. He is bound by duty and interest to make all the necessary inquiries, and procure all the information required by the Office for granting an insurance. The Office will be benefited and secured from unfair risk by acting solely on the judgment of their own medical officer, without requiring confidential communications from the medical attendant of the insured. These cannot always be obtained, are frequently imperfect and incorrect, generally useless, and quite worthless as a guarantee against risk. ('Ann. d'Hyg.' 1866, 1, 434.)

Diseases tending to shorten life.—Let us take the case, however, that this preliminary duty has been properly performed; important medical questions may arise respecting the alleged infringement of the conditions of a policy. The list of diseases specified in the inquiries comprises a great variety—affections of the head, apoplexy, palsy, epileptic or other fits, disease of the brain, insanity, disease of the lungs, spitting of blood, asthma, inflammation, disease of the heart, dropsy, diseases of the bowels, liver, kidneys, or urinary organs, gout, rheumatism, hernia, phthisis, or any hereditary malady. In the proposals of some Offices the mysterious word 'fits' occupies a very prominent position, but it is difficult to say what this word thus isolated actually means. It appears to have been borrowed from the vocabulary of the ancient searchers under the bills of mortality in the reign of Charles II. Thus it may comprise apoplexy, epilepsy, paralysis, syncope, convulsions from any cause, and even asphyxia. The word is too indefinite for a certificate, and should be expunged. In the meantime

a Court of Law will not allow insurers to benefit by the use of ambiguous terms in the contract, and it has therefore commonly restricted the meaning of the word 'fits' to attacks of epilepsy. The main condition, however, is involved in the terms—'*any other disease or disorder tending to shorten life.*' Upon the meaning of these words litigation commonly turns, and the opinions of medical experts are required.

It is impossible to lay down any general rules for determining what diseases have and what diseases have not a tendency to shorten life. Any deviation from health might be so interpreted; but the law puts a proper limitation here upon the meaning of the words, considering them to apply to those diseases only which, in a medical view, are regarded as of a serious nature, and, as a general rule, are likely either directly or indirectly to affect the duration of life of any person labouring under them. This question was brought to an issue in the case of *Watson* v. *Mainwaring*, in which payment of the amount of a policy was refused, because the insured had laboured at the time under what was called *organic dyspepsia*: and this fact was kept concealed from the insurers. It was left as a question of fact to the jury, whether the malady with which the deceased was afflicted, and of which he ultimately died, was an ordinary or organic dyspepsia at the time of the insurance. The judge (Chambre) in charging the jury said: 'All disorders have more or less a tendency to shorten life, even the most trifling; as, for instance, corns may end in mortification: but that is not the meaning of the clause. If dyspepsia were a disorder tending to shorten life within this exception, the lives of half the members of the profession of the law would be uninsurable.' We learn then, from this case, that a person may die from a disease under which he was labouring at the time of insurance; and yet if it be not the common course of that disease to shorten life, the representatives may recover the amount of the policy. This is an equitable interpretation of the terms; for the insurers have no right to give a forced meaning to the words of the policy, and to take advantage of what must be regarded as an accidental result. From other decisions we learn that, in order to render a policy valid, these words do not imply that the insured must have been at the time entirely free from all the seeds of disorder or latent disease. Such a condition is impossible. A man may be labouring under some insidious disease,—ulceration of the stomach or intestines, for instance—leading to perforation; but if this be, as it commonly is, unknown both to himself and his medical attendant, the insurers are bound to take the risk. Lord Mansfield, in the case of *Sir James Ross*, held that the warranty was sufficiently true if the person were at the time in a reasonably good state of health. A life may be a good life, although the person may be at the time labouring under some latent bodily infirmity.

On the other hand, a disease tending to shorten life must not be taken to signify only one of those maladies which have commonly a rapid and fatal course—as phthisis and scirrhus: it may apply to dropsy, gout, asthma, insanity, and many diseases of a chronic character. When the existence of these diseases, or even a well-marked *tendency* to them, is concealed from the insurers, or omitted to be stated through mistake, even without fraudulent intention, the policy in the event of death becomes void, because the risk incurred is really different from the risk understood and intended at the time of the agreement. Such diseases are not necessarily fatal, but this is not the question: their *tendency* is to diminish the expectation of life, and if medical evidence establish this with regard to any disorder intentionally concealed, whether chronic or acute, the contract is at an end.

Gout.—In December 1862 a case was tried in which it was alleged that there had been concealment of the existence of gout. (*Exors. of Fowkes* v. *The Manchester and London Assurance Company.*) The deceased Fowkes, a com-

mercial traveller aged 49, in the year 1860 effected a policy on his life for 1,000*l.* He died in June 1861. Payment was refused on the ground that the answers of deceased were untrue, and that there had been suppression of a material fact. It seems he was asked whether he had ever been *afflicted with gout*, and he answered 'No.' He was asked whether the life had been offered at any other Office, and, if so, whether it was accepted; and he answered that it had been proposed, and had been accepted at an ordinary rate. These were the answers which it was alleged were false. On the part of the Company a surgeon stated that in May 1858 deceased was suffering from suppressed gout. He had an 'extremely slight attack,' which lasted only about forty-eight hours; he did not tell the deceased that it was gout; he believed that he died of suppressed gout in an aggravated form. A proposal of the deceased to another Company, which had been declined, was put in evidence. On the part of the plaintiffs it was contended that there was no evidence that deceased had ever been 'afflicted with gout.' The Lord Chief Justice left it to the jury—first, whether the answers of the insured were untrue; and next, whether they were false to his knowledge. First, had he been 'afflicted with gout'? The question must be considered with some reasonable latitude, and it was not because a person had some passing symptoms which a far-seeing medical man might ascribe to the presence of suppressed gout in the system, but whether there was gout in a sensible, appreciable form. This certainly was stated, before the proposal, to have been 'the slightest possible case' of gout, according to the medical evidence. As to the other question—whether the life had been proposed at any Office and accepted or declined—it appeared that the life had been proposed at two Offices, and accepted by one but declined by the other. Had the assured answered truly in simply saying that he had proposed and been accepted? The question no doubt was not in the most comprehensive form, but was it answered fully and fairly, and according to its obvious meaning and effect, by saying nothing of the proposal which had been declined? He thought not, but left it to the jury. He, however, thought further that it was not strictly true that the life had been 'accepted' in the sense in which the word was used—for it had not been accepted by any Office on a proposal for assurance, but merely approved by the medical man. It was for the jury to say whether either of the answers was untrue, and, if so, whether either was untrue to the knowledge of the assured. The jury found that the assured had not been afflicted with gout at the time of the proposal; also that the answer to the other question was untrue, but not to his knowledge. The Lord Chief Justice directed a verdict for the plaintiffs, subject to a point reserved for the Court whether the knowledge of the untruth was material.

Habits.—Again, a person may be labouring under no actual disease at the time of effecting the insurance, but his *habits* may be such as to produce general injury to health, and to have a tendency to shorten life. Concealment of habits, the effect of which on health must or ought to be known to all medical men, may be just as fatal to a policy as the concealment of a serious disease. Although they may not always be included in the questions put by the Office, yet the law will equitably hold that the insurers should be made acquainted with all circumstances which might reasonably affect the risk. Concealed habits of drunkenness have thus given rise to medical questions of considerable importance; and in one remarkable instance, which will be mentioned hereafter, a question arose as to whether the practice of opium-eating, which had been concealed from the insurers, had or had not a tendency to shorten life. Some recent exposures, partly of a civil and partly of a criminal nature, have rendered Insurance Offices much more strict in their inquiries. In the rules already quoted special information is demanded upon the existence of material circumstances touching health or habits of life, and whether the person is or is not of

temperate habits. Any facts bearing upon these questions, if known to the medical attendant, must of course be stated. The existence of such habits must be known to the person himself; and the declaration which he signs is so explicit that, if intentionally concealed by him, no individual can reasonably complain of the voidance of the policy and the forfeiture of the premiums.

The case of *Von Lindenau* v. *Desborough*, tried in the Court of King's Bench before Lord Tenterden in October 1828, shows that medical men are bound, at the risk of invalidating the policy, to state the exact bodily condition, so far as it can be obtained by observation, of the person whose life it is proposed to insure. It appears that on the 16th June 1824, a policy for 3,208*l.* was effected, in the Atlas Office, on the life of the Duke of Saxe Gotha, at the time he was residing abroad. The Duke died on the 11th February 1825, within nine months of the time of effecting the insurance; and the payment of the amount of the policy was refused on account of a material concealment of the exact condition of the insured from the insurers. It appeared in evidence that for some time prior to the insurance the Duke had been an invalid, and that at the time it was effected he was childish, and had not spoken for two years. He had laboured under some affection of the brain, did not improve in health after the insurance, and ultimately died from an attack of paralysis. The certificate upon which the insurance was granted had been signed by two German physicians, Drs. Dorl and Ziegler. It was to the effect that the general health of the Duke was good; but that he was 'hindered' ('gehindert,' i.e. had an impediment) in his speech, and had an affection in his left eye. It was also stated that he was perfectly free from disease or symptoms of disease. On inspection of the head a tumour of large size connected with the inner table of the skull was found pressing upon the brain. This tumour was evidently of long standing, and had probably been the cause of the symptoms and death. Ten ounces of serum were found effused in the brain.

It appears that before the insurance was effected an agent in Germany had informed the insurers that the Duke had led a dissolute life, by which he had lost the use of his speech, and, according to some, of his mental faculties also; and on this the Office required a payment of nearly double the usual premium. The case of the insurers was that there had been material concealment of the Duke's real condition at the time of effecting the insurance. The late Mr. J. H. Green, who appeared as a medical witness for the plaintiff, the claimant under the policy, considered, from the history of the case, that there were no symptoms of organic disease at the time of the insurance, although the symptoms mentioned would lead to a suspicion of disease in the head. In reply to a question by Lord Tenterden, he said if, as a medical man, he had been asked by an Insurance Company concerning the state of a man's health who was unwilling to move, who was subject to control and influence, and who had lost his speech, he would have considered it his duty to mention these circumstances. Lord Tenterden then left it to the jury whether there had been any concealment of material facts relative to the Duke's health. The plaintiff was nonsuited, and a new trial subsequently refused.

There can be no doubt that the answer here given by Mr. Green was such as every conscientious man must have given under the circumstances. A medical expert appears in Court to speak the *whole truth*, to the best of his judgment, and not to make out rightly or wrongly the particular case of the person who summons him. On the other hand, it is obvious that Drs. Dorl and Ziegler gave a most improper certificate. They might not have been able to express any opinion respecting the existence of a tumour in the brain, but they were wrong in suppressing the real state of the Duke. If they knew his actual condition, their conduct was censurable; if they did not know it, they were not justified in signing a certificate at all. Because a man may

enjoy at the time tolerable bodily health, facts of this nature, showing great disease of the nervous system, ought not to be kept from the knowledge of the insurers. Imbecility, depending on whatever cause, should always be mentioned.

Material concealment.—Some medical practitioners entertain the opinion that, provided they can certify that the person is in good health at or about the time of the insurance, this is all that the insurers need know. The same opinion is commonly entertained by the insured; and the latter, after having been attended by one medical man for an illness, will apply to another, a comparative stranger, to certify to his condition of health for insurance. We must not lend ourselves to this system, which is based sometimes upon a mistake, at others upon fraud. If medical men would decline signing the papers under such circumstances, they would not only save themselves from censure, but be actually conferring a benefit upon the applicant, by preventing him from obtaining a policy upon terms which on his death may render it invalid, and entail a forfeiture of the premiums. From what has already been said, it will be understood that the exact state of health of the person at the time of the insurance does not represent the whole of the risk incurred by the Office. The restoration to health, as in a case of diseased lungs, may be only temporary: it may be speedily followed by phthisis, and the insurers therefore ought to be informed of the previous condition as well as the present state of the applicant. The conditions in the declaration are so explicit upon this point, as to render it scarcely necessary to refer to the propriety of making this addition to the certificate. The disease under which the insured had laboured may have been of a trivial kind, and not likely to affect the risk; nevertheless the safest plan is to state it. The option will then lie with those who are to incur the risk. When facts of this kind are either concealed or not plainly stated, the question of how far they were or were not material to be laid before the insurers is always left to the jury, who are guided in their verdict by their own common-sense as well as by medical opinions. It would appear also, from a decision of the House of Lords in *Anderson* v. *Fitzgerald*, that the truth of the answers given, and not their materiality, should govern the verdict of a jury. In a case tried in December 1856, Lord Campbell held that a suppression of the truth on the part of the person whose life was insured would not avoid the policy, if the party effecting the insurance was innocent and ignorant of the suppression.

Some medical men have adopted the plan of signing certificates, but have declined to make any written reply to certain queries: as, for instance, the general query—Can you give any and what information respecting the *habits* of the applicant? If nothing be known concerning these, it should be so stated; if, however, the existence of any habits affecting health be known to us, we shall do an injury to the applicant and ourselves by withholding information on the subject. It may be the means of causing a heavier premium to be demanded for insurance than if the facts were known; and if this should not happen, the omission is very likely to give rise to future litigation. Thus, in the case of the *Earl of Mar*, the payment of the policy was refused on the ground that the Earl had been addicted to opium-eating. His medical referee replied favourably to the *special* questions in regard to habits, whether sedentary or active, temperate or intemperate; but he neglected to reply to the *general* question regarding habits; and on the Earl's death it was found that he had been an opium-eater for many years before effecting the insurance. This fact might not have been known to the medical referee, but it is always better to fill in the reply either affirmatively or negatively, if the certificate be signed at all, than to leave the Office to draw an unfavourable inference, or to render the policy afterwards open to dispute.

In the case of a *Mrs. Elgie* payment of the amount of a policy was refused under the following circumstances:—The insured had been for some time prior to the insurance in a delicate state of health, and in the year 1821 it was thought that the symptoms were those of *phthisis*. In October 1822 she was twice alarmingly ill. In December of that year, wishing to insure her life, she called in a medical friend, who had not been in attendance upon her, to examine her and certify as to her state of health. It appears he examined particularly the state of her lungs and liver, and finding them, as he thought, sound, certified that the ordinary state of her health was good. On the 19th March 1823, he gave another certificate to the same effect, upon which the insurance was effected in April 1823. Mrs. Elgie died of disease of the lungs in April 1824. Payment was refused, on the ground that there had been concealment of material facts as to the state of health of the insured. It appears that, unknown to the medical gentleman who had given the certificate, the insured had been attended between December 1822 and the 19th March 1823 (the date of the certificate), by a medical practitioner residing in her neighbourhood for a cough, and that she had become much emaciated. This gentleman, however, thought that there was no structural disease—an opinion confirmed by the examination made for the certificate in March. The fact of the deceased having laboured under this illness was, however, concealed from the insurers. The jury thought that, although there had been concealment, it was not material, and a verdict was returned against the defendants. A new trial was granted, but a verdict was again returned against them. The truth is, it is not the concealment of every slight attack of illness that will vitiate a policy; although the contract being one, as it is termed, *uberrimæ fidei*, it is in the highest degree unwise either in the insured, or, if it be known to him, in the medical man signing the certificate, to conceal from the insurers any previous illness or medical attendance from another quarter. It may always be fairly urged that a knowledge of the facts might have led to the rejection of the life, or have made a difference in the amount of the annual premiums. One part of our duty therefore, if we sign a certificate upon a careful examination, is to ascertain whether the applicant has or has not been previously attended by another medical practitioner.

A case was tried at the Warwick Summer Assizes, 1844 (*Geach* v. *Ingall*), in which it was alleged that the existence of *phthisis* (pulmonary consumption), or phthisical symptoms, had been concealed from the Office. On the side of the plaintiff the medical attendant of the insured was called, and he certified that in May 1840, when the policy was issued, he considered the deceased to be in good health, and an insurable life. A physician who examined the deceased in the February of that year stated his belief that the chest of the deceased was sound, and he considered him to be a very good life. For the defence two medical men were called, who deposed that deceased had had spitting of blood before effecting the insurance, and that he had laboured under decided symptoms of consumption in 1840, which it was inferred must have existed at the time of the insurance. There was evidence of a general consumptive tendency in the family; the father died of it, and there was no doubt whatever that the insured had died of it in December 1843, three and a half years after the policy was issued. The medical evidence was conflicting, but the existence of the disease at the time of the insurance rested upon presumption and not upon proof; hence the jury returned a verdict for the plaintiff. A second and a third trial were had upon this case, on the ground of misdirection by the learned judges; but verdicts were again returned on both of these occasions in the plaintiff's favour. It is most probable that the seeds of consumption existed in the insured; but, unless there is some plain and certain evidence from symptoms, proof of this will amount to nothing. If inferential proof of this kind were

sufficient to avoid a policy, the payment of most policies might be easily and successfully disputed. Had the deceased died soon after the insurance, there might have been greater probability in favour of the view adopted by the Office; but he lived nearly four years afterwards; hence, if the symptoms had existed in a confirmed state at the time of the insurance, of which there was no direct evidence, as the medical officer of the Company had certified in favour of the life, the case must have been of an unusually protracted kind.

In a case in which *strangulated hernia* was the cause of death, the deceased had insured his life upon his own declaration and a medical certificate. In about thirteen months afterwards he died from the effects of an operation for strangulated hernia. The medical witness who signed the certificate stated at the trial that the deceased had never had hernia, and that he had not attended him for that disease. A letter was produced, however, in which he (the witness) had admitted the existence of hernia in the deceased four months before his death. He denied the truth of this statement, and said the tumour which he had reduced by manipulation was varicocele. The question was, whether hernia had or had not existed, and had been concealed from the insurers at the time when the insurance was effected. The admission in the letter carried the period of the alleged existence of hernia to five months after the certificate had been granted, whilst the deceased had positively stated in his declaration that he was not and had never been affected with rupture, and the medical certificate was to the same effect. One medical witness deposed that he had been consulted by the deceased, and had found him labouring under irreducible hernia five months before he proposed to insure his life! This gentleman stated that he then informed the deceased he had inguinal hernia: he tried to reduce it, but could not succeed. These facts, it was alleged, were not stated to the insurers at the time of the insurance, as they certainly ought to have been. On the other side, two medical witnesses, including the operator, thought that the hernia was quite recent. The operator found no adhesions, and there was nothing to induce him to suppose that the hernia was of fourteen months' standing. Evidence was also given to show that the witness who deposed to the existence of inguinal hernia before the insurance might have been mistaken in his diagnosis, and have confounded a hydrocele or a varicocele with a hernia; but, admitting this to be true, the existence of a tumour of any kind in such a situation should not have been kept concealed from the Company or their medical referee. The jury returned a verdict that there was no fraud, but that the deceased had had hernia at the time of effecting the insurance. A second trial was granted, and a verdict was then returned in favour of the plaintiffs.

If, under any circumstances, a jury should find that the concealment is material, the legal consequence is that the policy is void. It is not at all necessary that the person should die of the disease concealed. This rule was laid down by the late Lord Tenterden in the case of a *Colonel Lyon*. The Colonel insured his life by two policies in May and June 1823, and died of a bilious remittent fever in October of that year. Payment was refused on the ground of misrepresentation and concealment. Colonel Lyon referred the Office for a certificate of his health to a gentleman who had not attended him for three years previously. His answers to the printed questions were that he had had no other medical attendant, and that he had never had 'a serious illness.' The medical gentleman to whom he referred certified that his life was insurable, and the policy was issued. It appeared in evidence, however, that the deceased had been attended by two other medical practitioners from February to April 1823 for hepatitis, fever, and a determination of blood to the head. One of these employed very active treatment; he considered him to be in a dangerous state, and would not have certified him to be in health until the end of May 1823. All agreed that the deceased did not die

of the disease for which he had been thus attended. Lord Tenterden stated it to be his opinion, that if a man referred to one practitioner, because he could speak well of his health, and thought that if he referred to other medical men they would not so certify, although the insured did not die of the disease with which he was then afflicted, the policy would be void. A verdict was accordingly given for the defendants.

The practice of referring to medical men who have been only recently consulted is not unfrequent. The opinion of the usual medical attendant might be unfavourable, or he might report on the existence of habits which would render the life uninsurable, or insurable only at a high premium. This want of fair-dealing, however, commonly defeats its object. There is expensive litigation, and the policy is pronounced to be void. The case of *Wilshere* v. *Brown*, tried before Lord Abinger in the Exchequer in December 1842, and of *Palmer and Fish* v. *Irving*, tried at the Norwich Summer Assizes, furnish illustrations of this. In the latter case the deceased had returned that he had never had a medical attendant. His life was insured for a large sum on the 21st November 1842, and he died on the 5th December following. There was reason to believe that he had died from inflammation of the lungs; but it was proved that he had laboured under symptoms of pulmonary consumption, and had been attended by three medical men shortly before he effected the insurance. This was concealed, and the policy was set aside on the ground of fraud.

A singular case was tried at Glasgow in 1837, in which the proceedings were inverted, compared with the usual English practice in such cases. An Insurance Company brought an action against the representatives of the insured, on the issue whether the policy had not been obtained by misrepresentation and undue concealment. An insurance was effected on the life of a *Mrs. Ralston*, on the 10th December 1833. Her own declaration was that she was in good health, and that she was not afflicted with any disease or disorder tending to shorten life. She referred to her usual medical attendant, who certified that he had known her for ten years, and had been in the habit of attending her professionally; that she was last ill in the month of September 1833; 'that her indisposition was acidity of the stomach;' that she had not, to his knowledge, been affected with any illness of such a nature as to influence her general health; that she was then (30th November 1833) in perfect health, and was not subject to fits or any affection of the head, but occasionally to slight headache from acidity in the stomach. He knew of no circumstance in her business or habits of living tending to impair her health or shorten her life. The deceased died of apoplexy on the 3rd September 1834, within nine months from the issuing of the policy. The Insurance Company were about to pay the amount, when an action was brought by the medical attendant against the executors of the deceased for payment of 162*l.* for medical attendance, &c., on Mrs. Ralston from the 15th September 1833 (two months prior to the date of the policy) to the 4th June 1834. The referees awarded 145*l.* to the plaintiff. His books were given in evidence, and it then appeared that between the 19th September and 3rd December 1833 (the date of the proposal for insurance) he had paid her thirty-five professional visits, most of these of long duration. It further appeared from the diary that she had been frequently bled—her head had been shaved and blistered, and leeches had been applied to her temples. She had also had constant attendance after the insurance, and in the early part of 1834 had had several fits of epilepsy. Three medical witnesses deposed that the declaration of deceased and the certificates given by her medical attendant did not set forth her true condition; and that there had been misrepresentation and concealment of material facts. This was also the opinion of the judge, and a

verdict was returned for the Office. Although the illness prior to the insurance, might have had no connection with the death from apoplexy, it was held that the insurers ought to have been made acquainted with it.

A case involving certain questions in obstetric jurisprudence (laceration of the perineum) came before the Court of Exchequer in February 1873 (*Brembridge* v. *Hoare*). The action was by Brembridge, executor to a Mrs. Formby, against the Sun Life Insurance Company to recover the amount of a policy (5,000*l.*) on the life of the testatrix. This was resisted by the Insurance Company on the ground of material concealment. At the date of the policy Mrs. Formby was a widow, æt. 28. Her husband was a man of intemperate habits and believed to be affected with syphilis. She was twice confined—in March 1867 and April 1870; and, as it afterwards appeared, on both occasions instruments were used, and on one craniotomy was performed. In November 1870 she proposed to insure her life for 5,000*l.* in favour of a physician (Dr. Lyle), whom she subsequently married. She filled up the usual certificates, stating that her health was good, and that she had had no illness requiring the aid of a medical man except in her confinements and for passing ailments. She referred to a Mr. Kempe, who died soon afterwards. Mr. Kempe stated in his certificate that he had attended her in two severe confinements, from which she made quick recovery, and once or twice for slight stomach derangements. The Company wrote to Mr. Kempe for further information respecting the confinements, and he answered by saying that Mrs. Formby's labours were prolonged in consequence of a somewhat contracted pelvis and unusually large children, and he saw no risks in any future confinements more than ordinary. Dr. Budd, the Company's medical officer at Exeter, saw the lady, asked the usual questions, and all being satisfactory, recommended her as a good life. The life was, therefore, accepted on the 23rd December 1870.

The premiums were paid during the year 1871, and in March 1872 notice was sent to the Company of her death, with a certificate from the late Dr. Tyler Smith, stating that she had died on the 1st February of an internal abscess, he having attended her for six or seven months. This certificate naturally suggested to the Office some disease of the sexual organs, especially in connection with the history of the instrumental deliveries. Dr. Tyler Smith was therefore written to by the Actuary for further explanation, and he replied by stating that the late Mrs. Formby consulted him in August for leucorrhœa, or the 'whites,' and that the inflammation, which resulted in abscess and so caused her death, arose from her sitting out of bed on a cold night in January without a fire, while menstruation was going on. The abscess formed around the womb, but no post-mortem was made. The managers still considered the certificate of death most unsatisfactory, not being able to understand why the lady had come to London to put herself under the care of a medical man five or six months for the 'whites,' and had then unfortunately died suddenly of an abscess. After some hesitation they felt they could gain no better information than from her medical adviser, and agreed to pay the amount of the policy. Shortly afterwards it was reported to the Company that Mrs. Formby was in bad health at the time of the insurance, and that she had undergone an operation. Inquiries were made, and it was then found that in August 1871 she had suffered from prolapsus and irritable ulceration of the uterus, and, further, the root of the whole matter was that the perineum had been torn in one of her confinements. An operation was performed to restore the perineum: the wound healed: she had a relapse, followed by rigors, an abscess formed, and this broke into the rectum. In her letters she had always spoken of herself as nervous, excitable, and irritable. About the

time of her insurance and previously, she had been under the care of Dr. Willis of Monmouth; and Dr. Lyle (her husband) had prescribed for her tonics and astringent lotions. It was not alleged by the Company that Dr. Lyle knew of the lacerated perineum, or that his wife knew exactly the cause of her suffering. There was some evidence to show that she had had syphilis, as there was mention made of a rash, ulcerated throat, and the fears of the lady herself respecting this disease. The managers of the Company, although wishing to give credit of good faith as far as they could, yet could not acquit Mrs. Formby of untruthfulness in stating she was in good health when, if she had said as much about her health as was contained in her private letters, and had spoken of a chronic uterine discharge, her life would not have been taken, and her actual condition never known. On these grounds the Office refused to pay the claim.

The nurse who attended Mrs. Formby at her last confinement spoke to the laceration, and that she had attended to it. Another witness deposed to Mrs. Formby looking very ill in the summer of 1870, and complaining of weakness ever since her confinement, and she did not know that she would ever be well again; she had hysterics and a constant discharge. This evidence was confirmed by that of others. It appeared that after her last confinement she had always complained of languor and general debility, that she was generally out of health, and especially had difficulty in walking and standing.

No explanation was offered as to Mr. Kempe's silence respecting the laceration, but it was supposed that he might have forgotten the circumstance, or thought that it had healed. The two persons who had acted as referees confessed to knowing very little of the insured.

Dr. Barclay, Dr. Risdon Bennett, Mr. John Birkett, and Mr. John Wood were examined as scientific witnesses, giving it as their opinion that the laceration, falling of the womb, and attendant discharges would probably have been attended by the symptoms which Mrs. Formby spoke of in her letters, and which she ought to have revealed to the Office. They believed that death was caused by the bursting of an abscess into the peritoneum, or pyæmia; the latter, they said, was not common after such an operation as had been undergone, but might occur after the slightest wound. From the description of these witnesses Mrs. Formby appeared to be a dark woman, stout, and good-looking, at first sight presenting the appearance of health, but some witnesses said she was fat and flabby, of sedentary habits, soon tired on exertion, nervous and excitable, but ate and drank well.

The case for the plaintiff was that the insured was substantially in good health; that the laceration was of the most trifling character, and gave her no inconvenience, and was unknown to her; that the discharges were simply leucorrhœa; that the ailments voluntarily spoken of by her in the letters to her friends denoted merely a temperament very commonly found in women, in which a pleasure is found in detailing all their feelings and little ailments. That the laceration was slight; there was no need of the operation, which was done at Mrs. Formby's request when she understood its nature; that she perfectly recovered from it, and was about to leave Dr. Tyler Smith's care when an abscess appeared, totally unconnected with the operation, which speedily carried her off. Witnesses were called, who spoke generally as to her good health, but great discrepancies existed as to her walking powers, some saying she walked well, and others, on cross-examination, that she walked slowly, and was very soon fatigued.

Dr. West only saw her once, and did not thoroughly examine her. Dr. Graily Hewitt spoke of the laceration as slight, but that she had anteversion of the uterus with some enlargement, and ordered her a cradle pessary. She remained under his care some weeks. The witness knew nothing of the

ulceration and purulent discharge, but the patient was very much out of health.

Dr. Tyler Smith said that he found Mrs. Formby suffering from purulent discharge, prolapsus, and ulceration of the womb. He removed a pessary, and admitted, on being pressed, that this might have had something to do with the ulceration and discharge. He found also a laceration of the perineum. (Various accounts were given of this laceration. It did not pass through the sphincter ani, but reached to within about a quarter of an inch of it.) By medicines and injections he cured the discharge and ulceration, and then proposed the operation for restoring the perineum. This was performed at the end of the year 1870. The wound soon healed, and at the end of three weeks Mrs. Formby came down into the drawing-room to dinner. In a day or two, however, she became very ill, had rigors, and took to her bed. In the course of a week or two it was found that an inflammatory process was going on among the pelvic organs, and, finally, an abscess was felt which burst into the rectum. Again a collection of matter was formed, which Dr. Tyler Smith believed burst into the peritoneum, as she one day suddenly became worse with symptoms which denoted such an occurrence. Death took place about two months after the operation. He asserted again most positively that Mrs. Formby had recovered from the operation, and that he was about to send her to Seaford; that she got out of bed one night during a menstrual period, took cold, and this was the origin of the abscess. He therefore had no need to mention the operation in the certificate of death.

The learned judge (Bramwell, B.) then summed up, reviewing the whole of the evidence with great care, and finally left three questions to the jury—1. Was there any misrepresentation? 2. Was there any material misrepresentation? 3. If any, was the policy procured by it? The jury returned affirmative answers to all three of these questions, and a verdict was accordingly found for the defendants. (*Lancet*, 1873, 1, 252.) It will be perceived that in this case, from the verdict of the jury, there had been material concealment in reference to the existence of lacerated perineum since the last confinement,—as well as the presence of leucorrhœa and general illness, as indicated by the correspondence of the testatrix.

Urinary and Prostatic disease.—Diseases affecting the urinary organs have generally a tendency to shorten life. This is especially the case when these diseases have a chronic character and occur in persons advanced in life. A case of this kind (*Leete* v. the *Gresham Life Assurance Society*) was tried in the Court of Exchequer in July 1851. It was an action to recover 350*l.* on a policy on the life of one *Giles Clement.* The defendants pleaded misrepresentation and concealment of facts as to the real state of the health of the deceased. It was proved by a number of medical and other witnesses that deceased had been subject from boyhood to enlargement of the prostate-gland and prostatic disease. This state of the urinary organs was concealed from the knowledge of the Company at the time the policy was issued, and it was contended that it was material to the risk. Dr. G. O. Rees and other physicians gave evidence to the effect that the disease had a tendency to shorten life. The defence was that it had not a tendency to shorten life, because men of the most advanced age were found to be affected with enlargement of the prostate gland, and yet they lived on. This statement, loosely made by counsel, was not supported by any medical evidence, and the jury returned a verdict for the defendants, considering that the concealment was material to the insurers.

Among the diseases upon the concealment of which policies have been most frequently disputed may be enumerated gout, dropsy, paralysis, epilepsy, hæmoptysis, incipient phthisis, delirium tremens: and to this list may be added drunkenness, intemperance, and irregular habits.

Intemperate habits.—In a large number of cases the payment of policies is resisted on the ground of concealed drunkenness and general habits of intemperance. There is some difficulty in these cases, because medical men may entertain different opinions respecting the effect of such habits upon the general health, and the degree to which they may be safely carried. There is one thing, however, certain—whatever may be our opinion of their effect on health, we are bound to state, if known to us, that they exist, and thus put it out of the power of a Company to dispute a policy upon such a ground. From the frequent concealment of habits of this kind, some Offices now adopt the practice of making it a special question, to which a plain negative or affirmative answer should always be given—'Are you now and have you always been of temperate habits of life?'

When intemperance is alleged, we find not only conflicting medical evidence but much cross-swearing among the witnesses. It becomes a question—What is intemperance? and this is answered according to the peculiar views of a witness. A case was tried at the Exeter Spring Assizes in 1842 (*Southcomb* v. *Merriman*), which will show the difficulty of getting at the truth. Payment of a policy was disputed by the Office on the ground of concealed intemperate habits. At the trial the representatives of the insured called twelve witnesses to prove that the deceased was a very temperate man, while the Office called twenty-one to show that he was habitually intemperate! One of the temperance witnesses (for the plaintiff) defined drunkenness to be 'when a man lost his reason, could not give a proper answer, was not able to do business, had lost his legs, and was obliged to be carried home.' He admitted that the deceased had occasionally continued drinking for three or four days together, but that was a very rare occurrence. The medical attendant who gave the certificate said that the deceased's was a perfectly good life, and he considered him to be a person of sober and temperate habits: he had not thought it requisite to inform the Office of occasional outbreaks, because he did not think that drinking had any effect upon his health. Several witnesses proved that deceased was in the habit of drinking enormous quantities of beer, and that it required a great deal to make him ramble. The insurance was effected in October 1839, and the deceased died in April 1841, from inflammation of the lungs; but, in the opinion of the medical witnesses, this had not arisen from excessive drinking. Notwithstanding the concealment of these facts, the jury returned a verdict for the full amount claimed; but a rule for a new trial was afterwards obtained. This case shows what fallacious views are entertained on the medical questions of life-insurance. In a case like this it was clearly the duty of a medical man to describe the habits of the deceased. He might, if he pleased, have appended to the certificate that in his judgment they had not affected the health of the person, but the defendants, who were to take the risk, should have been placed in a position to form a judgment for themselves.

A similar question was raised in *Wigins* v. *Gresham Life Assurance Society* (Bristol Summer Ass. 1872) and decided in favour of the Company. There was proof of intemperate habits at the time the insurance was effected, and there was also evidence that deceased had suffered from diseased lungs. These facts were suppressed by the insured party. In the following case—*Bailey* v. *Imperial Assurance Company* (Oxford Circ. July 1869)—the medical man employed by the Company to examine the person whose life was proposed for insurance certified in favour of the life, and although his evidence did not accord with the medical evidence for the plaintiffs, the verdict of the jury was *against* the defendants on the statements of their own witness. The plaintiffs were the executrix and executor of the will of the deceased, John

Bailey. He had effected a policy of insurance on his life to the amount of 300*l.* with the defendants. The policy was dated the 5th of August, 1867, and contained a proviso that if any proposal or declaration made by the insured were untrue or fraudulent, or if any material fact were concealed by him, the policy would be void. The deceased had made a declaration that he had never suffered from cough and was free from consumption. After the death of the deceased the defendants refused to pay the amount of the policy, and now defended the action on the ground that in June 1866 the insured had consulted a Dr. Arlidge, who had examined him, and found him then to have signs of *incipient consumption*, and treated him for *diseased lung* and cautioned him against over exertion. Dr. Arlidge also stated that it was his habit to tell his patients if they were threatened with or had consumption, and that he believed he had told the deceased of his tendency to the disease. In February 1867 the deceased was again examined by Dr. Arlidge, and exhibited the same symptoms. In May and June 1868 the deceased was attended by a Dr. Fairman, who spoke to the presence of the disease of the lungs. On the other hand, the medical man employed by the defendants to examine the deceased before effecting the policy could find no signs of such disease, and the mother and widow of the deceased were called and declared their ignorance of his being the subject of any such complaint. It was ruled that upon the pleadings the *onus* lay upon the defendants of proving the untruth and fraud of the statements of the deceased, and evidence having been given in reference to this, Baron Pigott left the questions to the jury, whether there was any fraudulent concealment of a fact material to be known by the defendants, and whether there was any concealment, though without fraud, of any such fact, and whether there was any untrue statement at all. The jury gave a negative answer to each of the questions, and found a verdict for the plaintiffs.

In the case of the Hon. H. G. Talbot (*Craig* v. *Fenn*, December 1841), where no answer was returned to the question whether the deceased was of temperate and moderate habits of life, and the Company actually charged a higher premium in consequence, the jury returned a verdict in their favour, the real condition of the insured not having been made known to them at the time the insurance was effected.

Delirium tremens. Concealed habits of intemperance.—In *Hutton* v. *Waterloo Life Association* (Q.B. December 1859), an action was brought by a widow for the recovery of 2,500*l.* upon a policy effected in April 1854 on the life of her husband. Payment was refused on the ground that the written answers made by deceased to questions proposed by the Company were false, and therefore that the contract which was based upon them was void. One question was whether he was subject to *delirium tremens* or any disease calculated to shorten life, which he answered in the negative; a second was, whether he was of temperate and sober habits, which he answered in the affirmative; and a third was as to the name and residence of his 'ordinary medical attendant, to be referred to as to present and general state of health,' to which he answered, 'Dr. Cobb.' The inquiry now was whether these answers were true. The action had already been once tried, when the plaintiff obtained a verdict; but a new trial was moved for and obtained. At the second trial the evidence in the case, medical and general, showed that deceased was of intemperate habits, and that in May 1854 he had suffered from delirium tremens, of which disease he died in 1856; further, that Dr. Cobb, to whom he referred as his usual medical attendant, had not attended him since 1851, and that from this date until the date of the insurance he had been attended by another medical man, to whom he had given no reference, although he was his usual medical attendant. The jury found for the defendants on the main

issues. This case presented two curious features:—1st, the medical evidence proved that the first attack of delirium tremens came on on May 11, after the insurance had been effected; and 2ndly, the medical attendant of the deceased and the medical officer of the Company differed greatly about the deceased's state of health at or about the time the insurance was effected. The medical attendant of the deceased, who was a witness for the Company, deposed that he attended him for an attack of delirium tremens on May 11, and again on May 28, 1854—both attacks being the results of excessive drinking. The report to the Company, made by their own medical officer, dated May 22, 1854, gave, however, a most flattering account of deceased's health, and described him as a 'first-class life.' In his evidence at the trial this gentleman said that he then observed no indication of delirium tremens nor of drunken habits; the deceased was the picture of health. This serious discrepancy could not be reconciled by a re-examination of the witnesses. The concealment of intemperate habits was clearly proved, and on this probably the verdict of the jury chiefly turned.

Questions of a similar kind were raised in *Wheelton* v. *Hurdisty* (Q.B. Dec. 1856). An insurance had been effected to a large amount on the life of a Mr. Jodrell, and the payment of the policy was disputed on the ground that there had been concealment of intemperate habits, and of the existence of delirium tremens at the time the insurance was effected. The jury found that there had been misrepresentation and concealment.

One of the most singular cases of this description, in reference to conflicting medical evidence, was that of *Rawlings* v. *Desborough*, tried by Lord Denman in December 1837. The main question was, whether a Mr. John Cochrane, whose life had been insured, was or was not a person of intemperate habits at or before the time of insurance. A medical certificate had been given to the effect that his habits were not intemperate. The weight of the evidence, however, general and medical, tended to show that he was a thorough drunkard. One of the witnesses for the plaintiff said, the deceased 'never appeared to me to take anything to hurt a man; I never saw him drink more than the rest of the company; I only saw him intoxicated fifty or sixty times in four years! His health did not seem to be impaired by what he drank.' His groom stated that he had seen his master 'tipsy a hundred times, perhaps, but not beastly drunk.' The late Mr. Travers examined the deceased for one Office, and, from what he saw, advised that his life should not be accepted. He considered the man to be labouring under *delirium tremens*. One observation made by this witness is worthy of remembrance when a medical practitioner is engaged in examining a person for a life-insurance—i.e., a man may have pursued an intemperate course for some time, and yet his appearance at the time may be such as to lead a common observer to imagine he was in the plenitude of health, when he was liable to become the subject of an immediate attack. Notwithstanding the strong evidence of habits of intemperance from a period anterior to the date of the insurance, the jury returned a verdict for the plaintiffs, but a motion for a new trial was soon afterwards made. Lord Denman observed upon this occasion, in respect to what was *material concealment*, that he did not conceive the true meaning to be that the party whose life was to be insured was bound to volunteer a statement of every circumstance that anybody might afterwards think was likely to affect the risk of his life. The real intention was, that he should submit himself to a full examination and inquiry, that he is bound to state nothing untruly, and that he is bound to answer all questions truly. If he decline to answer, the Office may act upon his refusal, and if he answer untruly, he shall gain no benefit from such false statement.

In February 1840 a trial took place before Tindal, C.J. (*Pole* v. *Rogers*), relative to a policy on the life of Mr. Peter Cochrane, brother of this Mr. John

Cochrane. The insurance was effected in 1834. The insured died the following year of *hydrothorax*, brought on, as it was alleged by defendants, by very intemperate habits, the existence of which was concealed from them. The evidence, both medical and general, was just as conflicting as in the former case, and it became rather a question of credibility. The jury returned a verdict for the plaintiffs, thereby either denying the existence of intemperance, or considering that the concealment of it, if it existed, was not material.

This case is worthy of note in one point of view, as it involved a new question in medical jurisprudence—namely, whether we are to regard the *immediate* or *remote* effects on the body, produced by intemperate habits? The Solicitor-General, who appeared for the plaintiffs (the representatives of the insured), argued that the terms 'habits prejudicial to health' were too indefinite. Was it to be regarded as an abstract or relative proposition? He appeared to rest his case upon an admission that there was intemperance to a certain degree, but he contended that habits which were not at all prejudicial to the health of one man, might absolutely kill another. There was a very common habit of keeping late hours; this might be utterly destructive to the health of some persons, but not to that of others. This sort of condition was so vague that it left it open to an Insurance Office to resist the payment of any policy, unless the meaning of the words was brought within some reasonable and well-defined limits. The jury were bound to see whether the alleged intemperate habits had been indulged in for a long time without injury; they must look to all the habits of the person taken together, and see whether one habit was not counteracted in its effects by another. The insured was a man of very active habits, and therefore excessive drinking would not affect him as it would others who led a sedentary life.

This ingenious but sophistical reasoning involves an important medical question. It is well known that intemperance is a relative term, and may be differently construed by different medical witnesses. The real question, however, divested of its sophistry, is this:—Can any person indulge in an excessive use of alcoholic liquids without this practice sooner or later leading to an impairment of health, by producing disorder of the stomach and liver, and remotely affecting different organs? The effects of such habits may not show themselves immediately, but the Office requires to be informed of their existence or non-existence, and not of the period when they are likely to affect health visibly or to engender a fatal disease. To assert that a man can be addicted to excessive drinking without impairing his health, is contrary to all experience. There is no such compensation or balance of habits as that which the Solicitor-General supposed to exist in this case. Habit may accustom a man to intemperance—it may enable him to drink a large quantity of alcoholic liquid without being apparently injuriously influenced by it at the time; but a deranged state of system will sooner or later follow, and delirium tremens or dropsy will probably supervene. A good natural constitution may enable a man to resist the pernicious effects for a certain period, but ultimately they will show themselves in some form of disease; and in the case of these two brothers, the result of their intemperance was made apparent in the very early deaths of both. It is unfortunate that no light is permitted to be thrown on such cases by pathology. Post-mortem examinations are not always made in these cases; for the death being, as it is called, natural, it is not commonly thought necessary to inspect the body, although, as in the above instances, the condition of the liver and other organs might at once have removed a difficulty which arose from the conflicting evidence on the habits of the deceased.

In all cases of a contested policy, one important principle is uniformly acted upon; those who resist the payment are bound to prove what they allege by conclusive and satisfactory evidence. A Court will not receive probability or

conjecture—the evidence must be certain. Hence many suits fail from the medical evidence going no further than to show that a particular disease or habit had *probably* existed at the time of insurance. If the disease or habits be shown to have *certainly* existed, the evidence may still fail to prove satisfactorily that the concealment was either wilful or material.

Contested cases of life-insurance are very instructive: they often show the imperfect manner in which medical observations respecting health or disease are made, and that the medical treatment of persons whose lives are insured may become a material question in the event of a policy being disputed. In the case of *Chattock* v. *Shawe*, in reference to an insurance on the life of a Colonel Greswold, a question arose not only respecting the concealment of intemperate habits, but as to the concealed existence of delirium tremens, from the examination of handwriting, as well as from the description given by non-professional witnesses. It was here even doubtful what had caused the death of the deceased. According to one medical witness, it was a curious combination of Asiatic cholera, phrenitis, and epilepsy! It was proved that, more than three years before the insurance was effected, this gentleman had met with a fall, and he was afterwards seized with a fit, described by some witnesses as epileptic, by others as arising from concussion of the brain. The existence of intemperance and epilepsy prior to the insurance was not made out to the satisfaction of the jury, and they returned a verdict for the representatives of the insured.

In *Walters* v. *Barker*, tried at the Monmouth Summer Assizes, 1844, the deceased, at the age of sixty, insured his life on the 4th May 1841, and he died in the August following. It was alleged by the Office that the cause of death was an attack of *paralysis*, a tendency to which it was pretended had existed from a very early period of his life. No medical evidence was given on either side; there was merely a presumption that death might have taken place from paralysis: hence the verdict was for the plaintiffs.

An attack of hemiplegia may be followed by apoplexy. A case which excited some discussion among French medical jurists gave rise to the following question—Whether a man who had suffered from hemiplegia consequent on an attack of apoplexy, for a period of ten years, and who had died two days following a second attack, after entering into a contract, should be considered as suffering from the fatal disease at the time of signing the contract? According to the French law, the contract would be void if the person was labouring under a disease which proved fatal within twenty days of his signing it. ('Ann. d'Hyg.' 1866, 2, 141.) A similar question, as M. Tardieu suggests, might arise in reference to life-insurance. A man affected with hemiplegia at the time of effecting an insurance on his life, might in a few days be cut off by an attack of apoplexy. Would the fatal disease be considered as covering the whole period between the acceptance of the policy and death? M. Tardieu, following M. Marc, answers a question of this kind by saying that the hemiplegia showed the existence of a morbid predisposition, but that the disease actually destroying life did not exist at the time the contract was signed. (Loc. cit. See also 'Ann d'Hyg.' 1830, 1, 161.) In England it would be held that the concealment of the hemiplegia would be material, and the policy would be void, although the death might have taken place from apoplexy. If the insurers knew of the existence of hemiplegia, an acceptance of the life would be at their own risk.

Abstinence. The Vegetarian System.—We have already considered the effects of habits of intemperance, and the necessity for stating in a certificate the existence of them when known; but other habits may exist which have a tendency to shorten life, although in a less obvious manner. What are called

temperance principles are or were very prevalent. There are many persons who have been full livers, and have afterwards taken up the notion that water and a vegetable diet were all that was necessary to support life. This sudden change, especially in persons advanced in life, is very likely to affect the constitution seriously, and, if not to create disease, so to weaken the vital powers as to render any slight illness or accident serious. I knew one instance in which a gentleman who had been in the habit of living on a full diet, with a moderate use of alcoholic liquors, suddenly adopted the plan of living on water and vegetable food; he obviously fell off in strength, and lost his previously healthy condition. About a year afterwards he met with a slight sprain to the ankle-joint; inflammation ensued, which, in spite of the best treatment, assumed an unhealthy character; suppuration of the joint followed; amputation of the leg was performed, but, in spite of an improved diet, the powers of life never rallied. There was no attempt at union in the flap, and he finally died exhausted. There can be no doubt that these sudden changes in the mode of living are liable to lead to impairment of health, and to affect materially the expectation of life. Hence it is our duty to inquire and report upon facts of this kind when they become known to us.

In *Huntley* v. *The St. George Insurance Company* (Newcastle Autumn Assizes, 1858), a medical man insured his life for 2,000*l.*; and although certified to be in good health, and to all appearance he was so, he died from Bright's disease within three months after he had effected the insurance. There was also disease of the heart. The question whether he had either of these diseases at the time of the insurance were answered by him in the negative. It was contended that, as a medical man, he must have known that he was suffering from these diseases, and had wilfully concealed them. It appeared from the evidence that the deceased had taken to a vegetable diet, and it was considered that this was the cause of the rapid failing of his health. The jury returned a verdict for the plaintiffs, and the Chief Baron suggested that in future Insurance Companies should put among their questions to insurers, 'Are you a vegetarian?'

Opium-eating.—There is another habit said to be common, the concealment of which gave rise to an important trial: I allude to the practice of *opium-eating*. In 1826 the *Earl of Mar* effected an insurance on his life, and two years afterwards, *i.e.* in 1828, he died of jaundice and dropsy at the age of fifty-seven. The Insurance Company declined paying the amount of the policy, on the ground that the Earl was, at the time of the insurance, and had been for some time previously, an opium-eater. This practice was concealed from the insurers; and it was further alleged that it had a tendency to shorten life. It was clearly proved in evidence that the Earl had been a confirmed opium-eater up to the time of his death. According to Sir R. Christison, the deceased had taken laudanum for thirty years, at times to the amount of two or three ounces daily—a tablespoonful for a dose. He was a martyr to rheumatism, and, besides, lived rather freely. Many persons who were constantly about him, and many intimate friends, deposed that until 1826 (the year of the insurance) he was of a cheerful disposition, and clear in his intellects. Some of them admitted that they then perceived a change in his habits, which they attributed to the adverse circumstances in which he was compelled to live. In 1825 Dr. Abercrombie found him enfeebled and broken-down in constitution, but without any definite complaint. The main question at the trial was, whether opium-eating had a tendency to shorten life—for on this the issue turned—whether concealment from or the non-communication of this practice to the Office was or was not material.

Sir R. Christison, and Drs. Alison, Abercrombie, and Duncan were examined

on the part of the insurers; and although they entertained the opinion that the habit had a tendency to shorten life, they were unable to adduce any facts or cases in support of it. Their opinion was based not on personal experience, but on the general effects of opium, as manifested by its action on the brain—by its producing disorder of the digestive organs, and giving to the person a worn and emaciated appearance. In most of the instances collected, there was no evidence that life had been shortened by the practice. On the contrary, some of the persons had carried it on for years, and had attained a good old age. The jury returned a verdict for the plaintiffs, not on the ground that the practice was innoxious and its concealment immaterial, so much as on the technical point that the insurers had not made the usual and careful inquiries into the habits of the deceased; and they were therefore considered as having taken upon themselves the risk from their own *lâches*. It appears that the general question with respect to habits was not answered by the medical referee, and it was therefore considered that the Office had waived the knowledge of them. A new trial was granted, on the ground of misdirection, but the suit was compromised.

Hence it will be seen that no decision was come to in this case on an important question, which is very likely to arise again. It will be desirable therefore to examine some of the facts connected with opium-eating, in order if possible to see how far it really tends to shorten life. In the case of the Earl of Mar, it appeared to be a fair inference that the habit did not shorten his life, for he is represented to have indulged in it for thirty years; and for twenty-eight years, according to the statements of his friends, no injurious effects had followed. Sir R. Christison subsequently collected from numerous sources no fewer than twenty-five cases, from which we learn that opium has been taken in large quantities for forty years together without producing any marked injury to health. At the London Medical Society, the late Dr. Clutterbuck related the case of a woman who for seven years had taken two scruples (forty grains) of solid opium daily. She was fifty-four, had led an irregular life, and had first taken opium to relieve the pains of rheumatism. The dose was not increased, and the usual ill-effects of opium were absent—such as constipation, nausea, and loss of appetite. Although she did not increase the dose, the effects of the diminution of a single grain of her usual quantity were most marked, and she felt them immediately. Many cases of this description are recorded by medical authorities; they appear to show that opium-eating has not necessarily that tendency to shorten life which it has been hitherto supposed to have. There is, however, sufficient evidence to prove that the practice gives rise to noxious effects on the system and tends to impair health. It may not have this effect in all cases, except on the withdrawal of the stimulus; but this is not the question. It might be on this principle argued that the drinking of alcoholic liquids has no tendency to shorten life, because some hundreds of cases may be adduced in which the persons have been addicted to intemperate habits for years, and have still appeared to suffer but little in bodily health. They who have witnessed the effects of opium-eating in Turkey and China agree that the practice leads to the speedy destruction of health. Dr. Oppenheim, in writing on the state of medicine in Turkey, says: 'The habitual opium-eater is readily recognized by his appearance. A total attenuation of body, a withered yellow countenance, a lame gait, a bending of the spine (frequently to such a degree as to cause the body to assume a semicircular form), and glassy deep sunken eyes, betray him at the first glance. The digestive organs are much deranged; the sufferer eats scarcely anything, and has hardly one evacuation in a week; his mental and bodily powers are destroyed. As the habit becomes more confirmed, his strength continues decreasing, the craving for the stimulus becomes greater, and in order to produce the desired effect

the dose must be constantly augmented. After long indulgence, the opium-eater suffers from neuralgic pains, to which opium itself brings no relief. These persons seldom attain the age of forty if they have begun to take opium early.' This description of the effects is exactly what we should expect from physiological and pathological reasoning. Sir R. Christison states he has ascertained that constipation is by no means a general consequence of the continued use of opium; but this may be simply an exception to the rule. It is believed by some that the action of the drug may be different in different countries, and that the description of the effects produced by the use of opium in Turkey cannot be applied to the English opium-eater. The following case, however, which occurred to the late Dr. A. T. Thomson, at University College Hospital, shows that the climate has little influence on the effects of this drug:—

E. M., aged 35, was admitted May 26, 1835. About seventeen years ago she began to suffer from a pain in the right iliac region, for which a medical gentleman ordered her to take ten drops of laudanum night and morning. This was gradually increased, the pain continuing, until at last she took three teaspoonfuls every four hours, night and day. At first the ten drops relieved the pain, but it was found necessary to increase the dose to produce the same effect, so that the three teaspoonfuls at last did not produce so much relief as the ten drops at first. The effect of the small doses was simply to produce a relief from pain, without otherwise affecting the body or mind. As the dose was increased, however, she found it to produce a comfortable condition of the mind: she felt lively and cheerful, and was capable of doing any amount of work; it also caused a sense of warmth over the whole body. She had severe family afflictions, but while under the influence of opium was not at all distressed by them, although she felt them severely at other times. If she passed over the usual time for taking a dose, she had the most distressing sensations about the joints, not of pain, but such as she was unable to describe. She suffered from involuntary motions of the arms, fingers, and toes; numbness in the limbs and body generally; profuse perspiration, nausea, vomiting, and loss of appetite; a saline taste in the saliva, and a bad taste in the mouth; trembling of the limbs, great debility, and a feeling of lassitude. The memory and mental powers generally became impaired, and there was a great depression of the spirits. These symptoms were all relieved by a repetition of the dose. The opium also produced constipation—not more than one motion occurring in a week; and she did not recollect whether that was produced by medicine or not. If the dose was deferred, she had always suffered from severe headache. Her sense of smell was so much impaired that she could perceive no pungency in snuff; her taste was so much lost that she could not distinguish pepper or mustard; and her hearing was so defective that she could hardly detect the voice of any one who spoke; yet her own voice sounded most disagreeably loud to her. Her touch was so much affected that she could not execute any needlework. The acuteness of all her senses was, however, restored by the usual dose, the want of which was indicated by flushing and heat of the face. During the period of taking the opium she had very little sleep, and in the intervals she did not attempt to sleep from want of the desire, so that she generally worked all night. What sleep she had, was generally during the day, but this was much confused and easily broken. About five or six years ago, her resources being exhausted, she obtained admission into the hospital. The laudanum was here discontinued for the first three days, and all the above symptoms were present; she now for the first time appeared to see the most frightful spectres of animals and other objects in the ward. The symptoms were again relieved by the usual doses. The doses of laudanum were decreased during the whole time; and when she left the hospital, she took a teaspoonful only in the course of the day. On returning home, as she

was dependent on her friends, she was obliged to discontinue the laudanum and wine, and was unable to get beer; she was now more miserable than before, all the symptoms returning with increased severity, and for the first six months she was almost entirely helpless. There was pain in the chest with a cough, which had continued ever since. She was twelve months at home before the above distressing symptoms disappeared. The consequences of her opium-eating then observed, were a much-impaired taste, numbness of the limbs, coldness of the feet, inability to walk far without aching pains in the limbs, and a general sense of lassitude.

There is abundant evidence that this drug, as it has been administered to children in the factory districts, has produced serious injury to health and great mortality. In the late Mr. Grainger's report on the Children's Employment Commission, it is stated that laudanum and other preparations of opium are given to infants and children in gradually-increased doses, until the child will bear from fifteen to twenty drops of laudanum at a time. The child becomes pale and wan, with a peculiar sharpness of features, and rapidly wastes away. The majority of these children die by the time they are two years old. These facts appear to show that climate does not at all affect the action of the drug in the early periods of life, and the observations yet made are not sufficiently numerous to justify us in affirming the existence of this influence with respect to adults. Dr. Christison has remarked that many persons probably die young from the effects of this habit without the secret being discovered; for even the medical attendant as well as intimate friends may be kept in complete ignorance of the person indulging in it.

On the whole, we are bound to conclude that the habit of opium-eating is injurious to health, and is therefore calculated to shorten life. In any proposal for life-insurance, the insurers should be informed of this habit where it exists, and no medical man should sanction its concealment, merely because many persons addicted to it have lived for years in apparently tolerable health. One of the questions put to a medical man is, whether he knows any material circumstance touching the health or habits of the person to which the other inquiries in the certificate do not extend; and if so, he is required to state them. Now, without going the length of saying that the life of an opium-eater is uninsurable upon a common risk, the habit is itself sufficiently material to require that it should be declared in reply to such a question as this. The practice may be, and often is, concealed from a medical attendant; then the insured, if not candid in avowing its existence, must expose his representatives to the risk of losing all benefit under a policy. Independently of medical facts, which appear to favour both sides of this question, a jury would probably be guided to a verdict by the effect actually produced on the constitution of a person who has been addicted to the practice. If it has continued many years, and there is no proof of his health having in consequence undergone any remarkable change, this might be regarded by the jury as the best possible evidence in favour of the concealment not being in such a case material. The insurers could not equitably complain of the verdict in the Earl of Mar's case; for as he began opium-eating at twenty-seven, and died at fifty-seven without any obviously injurious effects being produced by the use of the drug, it could not be said that in his case at least the practice had shortened life. It is rarely in our power to apply any better or more practical test than this, under circumstances in which medical facts appear to bear both ways. The case is very different from intemperance in the use of alcoholic liquids: no one can doubt that in this form the results must be inevitably to impair health and to shorten life. The facts here bear one way; and if instances of longevity can be adduced among spirit-drinkers, they are well known and generally admitted to be exceptions to the rule. The queries put by Insurance Offices are now so explicit, that they must

be considered as including the habit of opium-eating; and there does not appear to be any just pretence for evading the admission of the practice, either on the part of the insured or (if known to him) of his medical attendant.

Tobacco-smoking.—I am not aware that the prevalent habit of smoking tobacco has ever been regarded in relation to life-insurance. Although inveterate smokers are liable to attacks of dyspepsia, loss of muscular and nervous power, weakness, and other derangements of the system, there is not, so far as I know, any evidence to show that the practice has a tendency to shorten life. Should the habit be stated in a certificate? I think it should, if known to the medical referee, and where it is of a most inveterate kind. (See 'Ann. d'Hyg.' 1866, 2, 152.) This would at least prevent objections on the part of a captious Company. There is no rule of law on this point, if we except a dictum of Lord Mansfield: 'The insured need not mention what the insurer ought to know, what he takes upon himself the knowledge of, what he waives being informed of; the insurer need not be told general topics of speculation.'

Insanity.—When we are called upon to say what *diseases* have a tendency to shorten life, there is commonly no difficulty in giving a reply, since the name of the disease—its known effects upon the body—the degree of mortality produced by it, and its intractableness, are data upon which a medical opinion may be easily expressed. There are some diseases, however, respecting which it is not so easy to return an answer; and among these may be mentioned *insanity*, which has already given rise to discussion in a Court of Law. The treatment of this malady falls out of the usual line of practice; and there are comparatively few in the profession who have made themselves acquainted with statistical details respecting it. This may account for the decision in the following case:—

In 1835, a trial took place at the York Assizes, in which the question was, whether insanity had or had not a tendency to shorten life. The representatives of a clergyman brought an action against the Providence Insurance Company, to recover the amount of a policy effected on the life of a gentleman; but the Office refused to pay on account of the person having been insane, and this fact having been kept from their knowledge when the insurance was effected. Several medical witnesses gave evidence on the occasion. One considered that insanity had a tendency to shorten life; another, that it had not; a third, who admitted that the deceased was labouring under insanity, did not consider that *his* mental state was such as had a tendency to shorten life. The judge charged the jury that the question for them to consider was, whether insanity had a tendency to shorten life, as, if so, this would make the concealment of it material. If insanity had such a tendency, they must find for the defendant; if not, for the plaintiff. The jury found for the plaintiff, on the ground that insanity had no tendency to shorten life, and that therefore the concealment was not material.

There is probably no case which more strongly shows the necessity for proper medical evidence on these occasions. The finding of the jury was contrary to all good medical experience, and was based on a complete mistake. The researches of Esquirol, Farre, and others show that insanity has a decided tendency to shorten life. So well aware are the Insurance Offices of this, that the existence or non-existence of insanity or mental derangement is now made a special question, to which an answer must be given in the declaration. The contrary opinion appears to have arisen from the hypothesis that insanity is not a bodily disease, and in no way connected with physical changes in the structure of the brain. Admitting this statement to be generally true, experience is decidedly against the inference based on it, when we look at insanity in the aggregate of cases.

There was formerly an erroneous notion that insanity had a tendency to

prolong life; but more correct statistical researches have shown that the insane are more liable than the sane to various diseases, and that when attacked they sink more easily under them: hence the mortality of the insane is, *cæteris paribus*, much above the average of that of the sane population. Among other fatal diseases, the insane are specially liable to attacks of paralysis and epilepsy; and paralysis, however slight, is commonly the forerunner of death in these cases. In private asylums the mortality is always less than in public hospitals; but recent researches have proved that the mortality of the insane has been much reduced by the introduction of an improved system of management and treatment.

Accurate observations have shown that the mortality among male is greater than among female lunatics, and the more advanced the age the greater the proportionate rate of mortality. The concealment of insanity in any of its forms, or even the concealment of a known hereditary tendency to this malady, would be considered material, inasmuch as either condition forms a special question to which a direct answer should be returned.

Accidental causes of death. Death from sunstroke.—There are Offices which now insure persons against accidents occurring on sea or land; and it would seem at first sight that in these cases there would be less room for litigation. The proof of the accident and the amount of injury done or (if fatal) the cause of death, would appear to be a simple matter. But the question arises—What is an *accidental* as distinguished from a *natural* cause of death? In other words, what is understood by an 'accident?' With our ideas of an accident, we generally associate physical injury or violence done to the person; and if a man dies from any other cause, his death cannot be said to be accidental. Lexicographers describe an 'accident' as 'the happening of an event without the design of the agent,' or 'an event that takes place without one's foresight or expectation;' but neither of these definitions would exclude diseases of a fatal kind. I agree with M. Tardieu that, in a medical sense, an accident is characterized by its effects on the body—it signifies injuries more or less severe such as are produced by blows, falls, the agency of poisons, death by asphyxia or by a violent death, often sudden and always more or less rapid. An accident, however, may only prove fatal after a long interval from secondary causes. (See vol. 1, p. 570.)

The strict definition of the term 'accidental death' is sometimes required in civil cases. A question of this kind came before the Court of Queen's Bench in January 1861 (*Sinclair* v. *The Maritime Insurance Company*), and the Lord Chief Justice delivered the judgment of the Court. The action was brought by the administratrix of a person named *Laurence*, who, being about to proceed on a voyage as a master of a vessel, insured himself against any personal injury from any 'accident' which might happen to him upon any ocean, sea, river, or lake. The assured being with his ship in the Cochin river, on the south-west coast of India, and being on duty on board his ship, was, in the language of the special case, 'struck down by sunstroke,' from the effects of which he died in the course of the same day. The question was, whether the death arose from 'accident' within the meaning of the policy, and the opinion of the Court was that it did not. It was difficult to draw a line between a death from 'accident' in a policy of this nature and a death from natural causes such as should be of universal application. But the Court might safely assume that in an 'accident' some violence, casualty, or *vis major* was necessarily involved, and that a death from a known natural cause could not be considered as accidental. Disease or death engendered by exposure to heat, cold, damp, and the vicissitudes of climate or atmospheric influences, could not properly be said to be accidental; at all events, not unless the exposure was brought about by circumstances of an accidental character. Thus, if a mariner in the

ordinary discharge of his duty caught cold and died, his death would not be accidental, though it might be so if by reason of shipwreck he was compelled to take to the boat, and died from exposure to wet and cold. In one sense the death was accidental, for the effect was uncertain beforehand; but it must be considered as the effect of natural causes, and not accidental. Sunstroke, so far as the Court was informed of it, was an inflammatory disease of the brain, brought on by exposure to the intense heat of the sun's rays. To that disease persons exposing themselves to the sun in tropical climates were more or less liable, just as persons exposing themselves to natural causes of a different kind were liable to diseases consequent therefrom. (See *ante*, p. 138.) Death from 'sunstroke' must therefore be considered as arising from natural causes and not from accident, and judgment was given in favour of the defendants.

There are now several Accidental Death Insurance Companies; some for accidents by railway travelling, others for accidents generally. A question may occasionally arise as to whether death took place from accident or disease. In *Cross* v. *The Railway Accident Insurance Company* (Lewes Summer Assizes, 1871) this question was raised under the following circumstances: A lady of sixty-six effected an insurance on her life against accidents of any kind; and the Company undertook to pay 500*l.* in the event of her death within three months after *an accident*. On the 20th of April 1870, she fell downstairs, and it was stated that she had then received an injury of which she died on the 11th of December following. The Company, however, disputed their liability for more than 30*l.*, which they paid into court. They denied that the accident was the cause of death, and suggested that she was already suffering under disease, and that she was not disabled from the effects of the accident for more than ten weeks. The plaintiff, however, who was the old lady's residuary legatee, stated that she was quite healthy when the accident occurred, and she and two other witnesses proved that she was walking about the town up to the day of the accident. From the nature of the case, it turned chiefly on the medical evidence —in which there was some contradiction. The medical men who first attended her found no indication of such an accident as would have caused her symptoms, which they ascribed to Bright's disease and dropsy; and Mr. Tatham, a surgeon of Brighton, formed the same opinion, and they were called for the defence; while a Mr. Wheatley, who had attended her, was called for the plaintiff, and was of opinion that the symptoms arose from the accident.

The learned Judge, Baron Bramwell, told the jury he felt inclined to leave it to them without remarks on his part, for really how could he attempt to discriminate between these conflicting opinions of the medical men? He ventured, however, to suggest that Mr. Tatham in some important points confirmed the evidence of Mr. Wheatley, and he could not help suggesting this practical test—Was the woman in a good state of health to all appearance just before the accident, and did the symptoms come on immediately afterwards? If so, then it was difficult to avoid the inference that the accident had something to do with it. Two witnesses besides the plaintiff (who was interested) alleged that the woman was walking about up to the very day of the accident. The jury, however, must be satisfied that the accident had disabled the deceased for more than ten weeks in order to entitle the plaintiff to a verdict beyond the sum paid into court. The jury, after some consideration, gave a verdict for the defendants, believing that the sum paid into court was sufficient to cover all the damage arising from the accident.

In the case of a person being killed by lightning whose life was insured against accidental death, the question might arise whether such a mode of death was accidental or not. Death by lightning is certainly not a natural cause of death, and in common language any person killed by lightning is said to have died accidentally.

Suicide.—Among the conditions in policies of insurance, there is generally a stipulation in the contract that the policy shall be void if the person who insures his life commits suicide. Thus, a medical question may arise as to whether suicide was or was not committed in a particular case. A person may die from poison, wounds, drowning, or other forms of asphyxia; and it may be difficult to say in certain cases whether the death arose from accident, suicide, or from violence inflicted by another. Such cases are often left in great uncertainty at coroners' inquests—the evidence received being imperfect or insufficient; because in cases of sudden death, provided there be no suspicion of murder, it is considered of little moment to make a strict inquiry. If the life of the deceased should happen to be insured under a policy containing this condition respecting suicide, the question may become of great importance to the interest of the insurers, and they will require clear evidence that the death was natural or accidental, and not suicidal, before paying the amount of the policy. The cause of death should in all cases of violence be determined by a medical man; this will put an end to any dispute concerning the payment of the policy, and relieve the representatives from the trouble and expense of litigation. If the death be sudden, and any suspicious circumstances are left unexplained, it is certain that a civil action will follow. We are not therefore safe if, at a coroner's inquest, we suppose that we have only to satisfy a common jury by a hasty opinion expressed from an external view of the body or an ill-conducted inspection, merely because it may appear to us quite certain that the deceased could not have been murdered. Should the deceased happen to be one of that class of persons on whose lives insurances are commonly effected, the whole of the circumstances connected with the examination of the body, and the medical opinion of the cause of death, must come to light, and if carelessly performed, will probably be made the subject of a severe cross-examination. I have known several instances in which there have been painful exposures of this kind, because the medical witness thought any kind of evidence would serve the purpose of a coroner's jury. The verdict of a jury at an inquest is not binding on a Company: they have not only a right but often good reason to dispute it, and they frequently exercise this privilege. The Insurance Companies are exposed to all kinds of frauds, some of them of a most fearful kind, actually leading, as in the case of burial clubs (a kind of life-insurance), to the perpetration of murder for the sake of the small amount insured.

A case of some interest in reference to the question of suicide by poison, on the part of a person whose life had been only recently insured for a very large sum, was tried before Lord Tenterden in 1832 (*Kinnear* v. *The Rock Insurance Company*). The late Mr. J. H. Green, Mr. Key, and myself, were called upon to give evidence on the part of the defendants. This trial would not have occurred but that the medical inspection of the body for the inquest, two years previously, had been most improperly conducted, and no satisfactory evidence of the cause of death assigned. As a sum of 10,000*l.* rested upon the issue, the insurers felt that they had a right to demand a full and perfect inquiry. The depositions taken at the inquest on deceased were sent to me for examination, and from these it appeared that the person whose life was insured died two years before the action was brought; the body was carelessly inspected for a coroner's inquest, and the contents of the stomach, without being subjected to any chemical analysis, had been thrown away. These circumstances placed great difficulty in the way of producing proof, and in fact so far as medical evidence was concerned, they left the question almost a mere matter of opinion. An application was made to me on the part of the Insurance Company, to know whether the exhumation of the body and any further processes of analysis would be attended with any benefit, but an answer was returned in the negative. From the manner in which the first examination had been

conducted, and from the fact that, as the symptoms under which the deceased had died could have been presumptively only those of narcotic poisoning, it was then altogether improbable that, after two years' interment, any trace of the poison would be discovered in the remains.

The deceased, who, according to the evidence given at the trial, had been for some time in a low state of mind, returned to his house, in the Regent's Park, on the evening of the 19th October 1830. The house was then undergoing repair; his family were in the country, and the only person residing with him at the time was a man-servant. The account given by this person was that the deceased returned home about ten o'clock in the evening, apparently in his usual health; he ordered him to place a decanter of wine, a tumbler and a wine-glass, on the library-table adjoining his bed-room; told him that he was going to take a composing draught, and desired that he might not be called on the following morning, saying that he would ring his bell if he wanted anything. The deceased went to bed, but about twelve o'clock the servant was awakened by a noise, as if the bar of the library-shutters had fallen. On getting up, he saw his master, without a light, in the act of returning from the library to his bed-room, which adjoined it; he took a light from witness, and again went to bed. On going upstairs ten minutes afterwards, witness found the light extinguished, and the door of the deceased's bed-room fastened. On the next morning, at 9.30, witness went to deceased's bed-room, and knocked at the door as usual, but received no answer; he went again at ten o'clock, but the door was still fastened, and the deceased did not answer when he knocked. The workmen who were employed in the house alarmed witness, about twelve o'clock, by telling him that they had heard his master moaning or groaning. A ladder was then procured, and the room was entered by the window. The deceased was in bed, and appeared to have just died as the witnesses entered. A surgeon was immediately sent for, who on his arrival examined and tasted some liquid which was found in the tumbler on the table. Search was made for a phial, but none could be found; however it was proved that there was on the library-table a piece of blue and a piece of red paper, evidently the cover and wrapper of a phial, which were not there previously. It was also deposed that a cork and string were found in the fire-place. The window of the library was found open, the shutter having been unfastened during the night.

The surgeon who was called stated that the body was lying in a composed state, the countenance being somewhat pale. There was perspiration on the skin, with patches of a livid colour here and there distributed over it. The body was inspected for the coroner's inquest by two physicians and two surgeons. An accumulation of putrid blood is said to have been found in the stomach, with an effusion on either side of the chest. The vessels of the brain were somewhat turgid, but there was no extravasation. The contents of the stomach were thrown away without any chemical analysis having been made. It appears that the only approach to an analysis was the drawing of a stick of nitrate of silver across the mucous membrane of the stomach at the time of the inspection. The cause of death assigned by these witnesses was the rupture of a blood-vessel in the stomach. A verdict of 'Death from natural causes' was returned; the body was buried, and it was supposed that all inquiry had ceased.

The cause of death assigned by the witnesses being considered altogether inadequate to account for this event under the circumstances—the suddenness of death in a person who was in perfect health the evening before—the absence of any sign of effusion of blood in the brain, so frequently met with in sudden death from apoplexy—together with the circumstantial evidence that some liquid had been taken by deceased and the phial disposed of, afforded a strong ground for suspicion. The insurers refused payment of the amount of the policy and demanded an inquiry.

The circumstantial evidence not being of itself sufficient to establish the fact of poisoning, additional evidence was required to determine—1, Whether the cause of death assigned by the witnesses at the inquest was adequate to account for it; and 2, whether, if not, the facts proved relative to the death of the deceased were consistent with narcotic poisoning—whether, in short, death by poison was or was not probable.

Mr. Green, Mr. Key, and myself were requested to give an opinion on these points. With regard to the first, we said the cause of death assigned by the witnesses was inadequate and unsatisfactory. The blood found in the stomach was loosely described as half-putrid and not coagulated: so far from its being proved that it had been effused during life, it was not improbable, from the careless manner in which the inspection was made, that it had proceeded from some vessels divided by the examiners during the inspection. Admitting that it had been effused during life, it did not furnish a satisfactory explanation of the cause of death, since the quantity was small. That it was not satisfactory to the inspectors themselves appeared certain from the fact that they examined the stomach for some kind of poison by the rough experiment of drawing a stick of nitrate of silver over the mucous membrane! Further, gastric hæmorrhage rarely destroys life on a first attack, and is generally accompanied by vomiting of blood; but the deceased had never been subject to hæmatemesis, and there had been no bloody vomiting.

With regard to the second question, the facts proved might be explained by supposing that the deceased had taken a poisonous dose of laudanum or of some preparation of opium: it might be contended that no opiate was present in the stomach, but it did not appear that any analysis had been made. The deceased had died in about the period at which this poison operates fatally; and it was for the jury to determine from the circumstantial evidence, as the medical evidence wholly failed to throw light upon the subject, how far this was likely. We all agreed that narcotic poisoning in the deceased's case was, so far as we could speak in the absence of an analysis, probable, inasmuch as the facts proved respecting his death agreed with this view, and the results of the medical inspection so far as they went were consistent with it. On the other hand, the question might arise whether there were no natural causes which would have destroyed life within twelve hours in the same tranquil manner in which the deceased was supposed to have died. To this it may be replied, that apoplexy and other diseases might also have accounted for death; but there was no evidence from the inspection to establish the existence of these, and death from a narcotic poison was, medically speaking, just as probable. In short, as the evidence was essentially of a negative kind, and there were two ways of accounting for death, either of them consistent with the medical facts, it remained for the jury to decide from the whole of the circumstances which was the more probable. The cause of death was entirely a matter of medical presumption. It was impossible to swear that the deceased could not have died from apoplexy or from the effects of a large dose of an opiate. As the case was only one of *suspicion*, and not of actual *proof*, a verdict was returned for the plaintiff.

There can be no doubt of the propriety of the verdict, since the law always justly insists upon what the circumstantial evidence, combined with medical opinions, was here incapable of affording—namely, *direct* and not inferential *proof* of death from poison. The insurers had alleged suicide by poison—this they were bound to prove by clear and distinct evidence; the plaintiff was not required to show that the death was natural. If, besides the coloured paper-wrappers, string, and cork, a phial which had evidently contained laudanum had been found, or the liquid in the tumbler, instead of being merely tasted or smelt by the medical gentleman and then thrown away, had been carefully analysed, or had the same cautious proceedings been adopted with regard to the contents of

the stomach, clear evidence might have been adduced which would have satisfied the jury that the deceased had died from narcotic poison. In supposing that the deceased took a fatal dose of an opiate, it was assumed that he had disposed of the bottle by throwing it out of the library-window, which was found open after the shutters had been fastened; no traces of the *composing draught* which he had told his servant he should take were found—not even the phial—and the coloured wrappers of paper, cork, and string found in the bed-room were not accounted for.

The only point that went against the presumption of narcotic poisoning was this: the servant swore on the trial that his master's bell rang about nine o'clock. If this were true, the deceased could not then have been under the influence of a narcotic poison, as he must have walked across the room to have rung the bell. This would have given but *three hours* for the fatal operation of the poison, while most cases of poisoning by opium have not proved fatal in less than from six to twelve hours. Still, opium has been known to cause death within a short period. Sir R. Christison met with a case where the person died in three hours, and Dr. Beck another where death occurred in two hours and a half. But on comparing the evidence of this witness at the inquest and the trial there was a great discrepancy. He said nothing of a bell ringing, when he was examined at the inquest recently after his master's death (*i.e.* two years before the trial), when it might be supposed that the whole of the circumstances were quite fresh in his mind. He had also stated that just before the alleged ringing of the bell, when he knocked at his master's door, on going up to his room about nine o'clock, he received no answer. There was only one bell in the house, and the four workmen employed about the house did not hear it ring during the whole of the morning. These four witnesses also deposed to another important fact; they swore that between eleven and twelve, hearing a groaning or a snoring in the deceased's bed-room, they proposed to the servant to break open the door and enter; but he objected because, he said, his master was poorly—that he had taken a composing draught, and had desired him not to go near the room until he heard his bell ring. This he said two hours after the time at which he swore on the trial that he had heard the bell ring and went up to answer it! This part of the evidence, which appeared to militate against the presumption of narcotic poisoning, was therefore inconsistent and unworthy of belief; but by a strange omission the discrepancies in the evidence of this witness escaped notice at the time. This case shows the importance, nay the absolute necessity, of performing post-mortem inspections and chemical analyses for inquests in a careful and proper manner. It also illustrates the principle that, although suicide may be a ground for vitiating a contract of this description, the allegation must not rest upon mere medical presumptions or inferences, but upon direct and positive proofs.

Among the medico-legal questions connected with this subject is the following: Does the proviso in the policy respecting suicide include all acts of self-destruction, or is it restricted only to those cases in which either a sane or a partially insane person consciously destroys himself? This question has been elsewhere fully considered (p. 496, *ante*). The act of suicide does not necessarily indicate insanity; but even if it did, the rule of law, as settled by a majority of the judges in reference to this proviso in cases of life-insurance, is that whenever an insured person destroys himself *intentionally*, whatever may be the state of his mind, the policy is void. If a person, whether sane or insane, kills himself *unintentionally*, then the insurers are liable; but the onus of proof in this case lies upon the plaintiffs, *i.e.* those who would benefit by the policy. A question here arises. Can an insane person really be considered to have the same 'intention' to destroy himself that could be ascribed to one who was sane? Is not the intention affected by the state of insanity?

This may in some measure depend on the degree which the mental disorder has reached. According to M. Tardieu the decision of a French tribunal on this subject, of the date of the 8th August 1854, was to the following effect: 'Whosoever has caused his own death under an attack of insanity cannot be considered to have fallen a victim to "suicide" in the sense in which this term is used in policies of insurance.' ('Ann. d'Hyg.' 1864, 2, 394.) The self-destruction of all lunatics should be treated as an exceptional state, and should not involve the heirs of the insured in the same penalty of loss of premiums and insurance, as if the act had been committed by a sane person. According to the practice of some British Offices, the act of suicide does not render a policy void; but in the new Government life-insurances there is a provision to the effect that they will be void in case of death by the hands of justice or by suicide.

It is naturally supposed that a man has a direct interest in preserving his own life, but this of course will not prevent him from falling a victim to the criminal designs of another. The insurable interest of a person in the life of another became an important question in January 1863, in *Hebdon* v. *West*. The plaintiff, a clerk in a banking-firm, had effected an insurance on the life of one Pedder, who was a member of the firm. Plaintiff became indebted to the firm for the sum of 5,000*l*., and Pedder having informed the plaintiff that he should not be troubled with any demand for repayment during his (Pedder's) life, the plaintiff insured Pedder's life in the defendant's Company for the sum of 2,500*l*. It was the payment of this sum to the plaintiff that was now in dispute, the defendant contending that plaintiff had no insurable interest in the life of Pedder. The case was argued, and the Court put to counsel the cases which had been already decided, of a father insuring his own life, or a husband his wife's. It had been held that in these cases there was no insurable interest. Hence, when a husband desired to make a provision for his wife, he insured his own life—she did not insure his. Further, they instanced the remarkable case of *Wainewright* (p. 641), in which that person induced his sister-in-law to insure her life, and then poisoned her, in order, as next of kin, to get hold of the sum assured. That case showed the immense importance of the law requiring proof of a real interest in the life of a person whose life was insured. The result of the argument was that the Court reserved its judgment; but there appeared to be no agreement concerning what was a legal insurable interest in the life of another.

From a statement made by M. Tardieu ('Ann. d'Hyg.' 1866, 2, 394), it would appear that life-insurances are occasionally effected in France with a deliberate design on the part of the insured to destroy their lives for the benefit of their heirs! The Offices have good reason to suspect the existence of this fraud, but there is a great difficulty in proving the fact. Even when they feel certain that an act of suicide has been perpetrated from a desire to benefit a family, owing to misfortunes in business, the Offices are most unwilling to undertake judicial proceedings against the executors, partly perhaps from the proofs not being quite satisfactory, and partly from a desire not to damage their business in public estimation.

It is often a matter of great difficulty to distinguish suicide from accident, but the distinction is absolutely necessary when a claim is made through the deceased for the payment of a policy of insurance. (Vol. 1, pp. 487, 673.) M. Tardieu relates some cases in illustration of the difficulties which surround these investigations. On the 7th September 1858, at 7 A.M., while a carriage was being driven along the boulevards of Paris, a loud report of a gun was heard and smoke was seen issuing from the carriage-window. The carriage was stopped, and it was then seen that there was the body of a man in one corner in a sitting posture, with a double-barreled gun between his legs. Death must

have been almost instantaneous, as the left half of his skull, which had been blown off in the explosion, was found lying between his legs. It appeared that he had only been in the carriage five minutes, and that shortly before he had insured his life in two French Offices for the sum of 150,000 francs (6,000*l.*). When the claim was made by the relatives, the Offices refused to pay, on the ground that the death was a voluntary act (deliberate suicide) and not accidental. The case was fully investigated by MM. Tardieu and Brierre de Boismont, and they have published a lengthy report of the facts. ('Ann. d'Hyg.' 1860, 1, 443, and 1859, 2, 126.) The conclusion which M. Tardieu drew from an examination of the position of the body and of the gun, as well as from the oblique direction of the wound in the head, was that the piece had been voluntarily discharged, and death was the result of suicide, and not of any accident from the mode of carrying the gun. The act had been perpetrated in a deliberate manner, but there was nothing to show that the deceased had contemplated self-destruction.

As the Offices repudiated the contract on the ground of suicide, it was for them to prove their case. This they failed to do, and the Tribunal condemned them to the payment of the full amount of the insurance. ('Ann. d'Hyg.' 1866, 2, 397.)

M. Brierre de Boismont reports a case which is also instructive in reference to this difficult question. On the 12th October 1840, a man was found dead, apparently strangled, on the road to Stettin. His affairs were found to be in an unsettled state, and it was supposed he had destroyed himself; but the position of the body, and the condition in which it was found, were apparently not consistent with this theory. His hands were tied behind his back, and there were the appearances of a robbery. As all the circumstances pointed to a violent death at the hands of another, a judicial inquiry was made, which from want of evidence led to no result. The deceased, who was a merchant, had recently effected an insurance on his life for the amount of 40,000 francs, which was to be paid to his family on his death, except in case of his committing suicide. This sum was paid into Court, and was subsequently reclaimed by the Office on the ground that the deceased had destroyed himself. A witness had come forward with an autograph letter of the deceased, in which he had described the motives that had led him to perpetrate the act, and the mode in which he intended to carry out his design. This document clearly proved that he had sacrificed his own life for the sake of his family, in order to preserve them from impending ruin. According to the private letter to his friend, which had every appearance of authenticity, he had suspended himself to a beam, from which a friend, by a previous arrangement, had cut him down, and had then disposed his body on the high road, under such circumstances as to give the impression that he had been the victim of a murderous assault. ('Ann. d'Hyg.' 1866, 2, 397.) The attempt thus made to defraud the Insurance Company by hastening the term at which the insurance would fall in, and by falsifying the conditions of the policy, was defeated by the production of a private letter.

There is another kind of fraud which perhaps is more common, namely, that in which the insured simulates death in order that his relatives or creditors may receive the amount of the insurance. Two instances of this kind have been related in a former part of this work. (Vol. 1, pp. 166, 167.) In one the insurer endeavoured to make it appear that he had lost his life while bathing on the sea-shore, his clothes being found on the steps of a bathing-machine; in the other, the case of a fraudulent bankrupt, the man registered his own alleged death, and followed his own coffin to the grave in a country churchyard! In both cases the fraud was detected, and the Offices were saved from a heavy loss.

Insurance murders.—The insurance of the lives of others has been considered to be objectionable, on the ground that it tends to create an interest in the death of a person, and thus to lead to secret acts of murder. The 14th George III. c. 48, expressly enacts that no insurance on a life shall be valid unless the person insuring has a direct legitimate interest in the person whose life is insured. This statute was enacted for the purpose of preventing gambling in policies, and to guard society against the risk of persons insuring, and then contriving the death of the insured for the sake of the payments to be made under the policy. Its effect is simply to render the policy void; it does not require that the premiums shall be refunded, nor does it award any penalty to the offenders. As policies of life-insurance may be bought and sold like other property, they may fall into the hands of persons who have no other interest in them than the desire that such policies should speedily become claims by the death of the insured. The interest of such holders, it has been justly observed, lies in the *death* and not in the *life* of the insured.

In another part of this work (vol. 1, p. 672) a case is related in which a man was found dead at St. Fergus, in Scotland, from a pistol-shot wound under very suspicious circumstances. The medical and moral facts were not consistent with the theory of suicide; on the contrary, they all pointed to a cool and deliberate act of murder. A medical man was placed on his trial for this alleged crime, and the motive assigned for the act was that the prisoner had recently effected insurances in three different Offices to the amount of about 2,000*l.* upon the life of the deceased—a poor man, in whose life it was proved he could have had no lawful pecuniary interest. The insurances were only for short periods, and as in the Scotch Offices the policies are not rendered void by suicide, the amounts could be claimed even assuming that the deceased had destroyed himself. The body, weapon, and other objects had, it was supposed, been arranged with a view to make it appear that the act was suicidal. It is a significant fact, however, as a key to explain the death of the deceased and the motive of the accused, that the risk connected with the largest insurance (1,000*l.*) commenced on the 24th November 1852, and terminated on the 24th November 1853. Only one premium to the amount of about eleven pounds had been paid, and this payment was proved to have been made by the prisoner. The deceased was found dead on the 20th November 1853; *i.e.* only four days before the date at which the policy of insurance on his life would have lapsed! The evidence went to show that the accused had the motive, means, and opportunity of committing this crime; but as there were no circumstances which could directly fix it upon him, he was acquitted of the charge.

The following case is related by M. Tardieu ('Ann. d'Hyg.' 1866, 2, p. 410):—On the 26th March 1856, an insurance was effected in a French Office on the life of one Johann Peter Hoffstedt, a domestic servant, living at Carlscrona in Sweden, born the 22nd September 1805. The insurance was for the benefit of Franz Swensson, a merchant's clerk at Carlscrona, and the policy was granted on the certificate of M. Ekruntell, said to be a physician of good practice in the same town. Hoffstedt was a man of drunken habits, and in one of these fits he hanged himself, but he was cut down and his life saved by Swensson. After this Swensson entered into a secret compact with Hoffstedt, promising to supply him with any amount of brandy, provided he took no other nourishment. It was under these circumstances that the life of Hoffstedt was insured in the French Office. As, in spite of his drunken habits, Hoffstedt continued to live longer than Swensson had anticipated, there were violent quarrels between them, and the latter dreaded the payment of a second premium. Hoffstedt died on the 31st August 1856, six months after the policy of insurance had been issued. After another six months had passed,

Swensson claimed the amount from the Office. Swensson was charged with the murder of Hoffstedt by poison, and although he was acquitted for the want of distinct proofs, the facts which were elicited showed that he had entered into a disgraceful speculation to profit by the death of the insured. Arsenic was found in the body of Hoffstedt and in the possession of Swensson, but administration by the latter could not be proved. An attempt was made in France in 1859 to compel the Office to pay the insurance. It was then proved that Hoffstedt had died from the effects of arsenic, but it was suggested, in answer to this, that the poisoning might have been the result of suicide and not of murder; but the case was ultimately decided in favour of the Office, on the ground that whenever an insurance on a life has been effected, if the insured commits an act of suicide, or if his death has been caused or accelerated by the agency of the person who would benefit by it, the policy becomes null and void.

A remarkable case was tried in this country in 1835 (*Wainewright* v. *Bland*, Exchequer, 29th June, 1835), in which the amount of a policy of insurance effected for two years on the life of a *Miss Abercrombie* was sought to be recovered. The action was brought against the Directors of the Imperial Assurance Company, and was resisted by them on the grounds that the lady had been destroyed by poison, and that the plaintiff Wainewright had no lawful pecuniary interest in her life. As there is strong reason to believe that this was one of the first murders brought about by the use of strychnia in this country, it may be considered as the type of those which twenty-one years later were for a time successfully perpetrated by the criminal William Palmer. Strychnia had been discovered only twelve years previously to the death of Miss Abercrombie, and it was then but little known as a poison either in England or France. The history of the case is remarkable, as the real cause of death was completely overlooked. Two fine-looking young women of the name of Abercrombie, the daughters of a deceased officer, with no other property than pensions of ten pounds a year from Government, lived a few miles out of town with their brother-in-law, a man of the name of *Wainewright*, and his wife, who were also in reduced circumstances. They came to London in 1830, as the winter was setting in, and took lodgings. The elder girl, having just attained her twenty-first year, was sent, sometimes alone and sometimes with her sister, to no fewer than eight or ten Insurance Offices, to effect insurances at each on her own life. Being in full and vigorous health, she met with a favourable reception from several Offices, although she could assign no other reason for wishing to insure her life than that she was told it was right for her to do so. Five Offices granted time policies in her own name, some for two, others for three years, for no less a sum than 18,000*l.* The premiums paid, together with the stamps, amounted to two hundred and twenty pounds, and in case of Miss Abercrombie living more than three years, all these payments would be lost. Not satisfied with these accepted insurances for this large sum, Wainewright induced her to apply for 2,000*l.* from the Eagle, 5,000*l.* from the Globe, and 5,000*l.* from the Alliance, but these proposals were declined. In October 1830 the Imperial accepted an insurance on her life for two years for 3,000*l.* On the 13th of the following December, when in perfectly good health, she made her will, and assigned this and other policies to the plaintiff Wainewright and his wife. On the evening of this day the whole party went to a public theatre, and on their return had a supper of oysters and porter. On this occasion Miss Abercrombie was first taken ill; it was said she suffered from an hysterical attack, but there was no clear account of her illness at this time. It was not until the 16th that she was seen by a physician, but her illness was not then such as to excite alarm; it was supposed to be hysterical. On the 21st this physician was suddenly called to see her, and he then found

her in violent tetanic convulsions, resembling those which are sometimes the effects of a wound—i.e. *tetanus*. She said she was sure she should die, and she suddenly went off into a fit of convulsions. The physician left the house, returned in about an hour, and she was then just dead. The appearances presented by the body are imperfectly reported: there was an effusion of serum at the base of the brain, and to this death was referred. There was no analysis of the contents of the stomach: it is said they were minutely examined, and that there was no appearance of anything sufficient to account for death; but the person to whom this examination was entrusted was not called at the trial, and so little was known at that time of the chemical properties of strychnia, that any analysis for this poison would have had a negative result.

Wainewright, as executor and trustee, applied for payment of two of the policies which had been assigned to him by the deceased, but this was refused. He then went to France with his family, and five years afterwards (in 1835), through an agent, brought an action for the amount against the Imperial Assurance Company. On this occasion the jury could not agree in a verdict. ('Med. Gaz.,' vol. 16, p. 606.) Another action was afterwards brought against the Company, and the facts above stated came out at the trial. The Attorney-General, on the part of the Company, said that the plaintiff had left the country, and there was good reason to believe that he would never again return to it. The judge (Lord Abinger) charged the jury that, whether murder had been committed or not, the executors could recover, provided the insurance had been effected *bonâ fide* on behalf of the deceased. His lordship directed their attention to the extraordinary fact of this young lady, the deceased, having effected these large insurances for only *two* years—of her sudden illness and death in convulsions soon after the assignment of the policy—and reminded them that no proof had been adduced to substantiate the reasons she had given to the various Offices for effecting the insurances on her life. By the will and assignment made to the plaintiff and his wife, these persons were placed in a situation in which the law would not allow any one to stand—namely, that of having a strong interest in procuring the death of a fellow-creature by unlawful means. The jury returned a verdict for the insurers, on the ground of misrepresentation and want of interest.

There can be no doubt that this young woman died from the effects of a dose of strychnia, administered to her shortly before she was seen by the physician on the afternoon of the 21st December. Tetanus, as it is produced by this poison, is rapidly fatal; but as it arises from wounds or from exposure to cold, it comes on slowly, and is only fatal after some days, and there was no wound or other natural cause to account for its occurrence. Wainewright was subsequently tried on a charge of forgery, convicted and transported for life. He died suddenly of apoplexy in 1852 in Tasmania, while undergoing his sentence as a convict. Before his death, it is reported, he substantially admitted that he had destroyed Miss Abercrombie with strychnia, and had previously killed two other relatives with the same poison—namely, his uncle Dr. Griffiths, and Mrs. Abercrombie, his wife's mother. Their symptoms were similar, and they all died suddenly. Death was ascribed to heart disease, pressure on the brain, or hysteria!

Some of the poisonings which took place at Rugeley in 1855–6, and which culminated in the conviction and execution of the notorious *William Palmer* for the murder of J. P. Cook, originated in the easy system of raising money by the insurance of lives. (*Reg.* v. *Palmer*, vol. 1, p. 405.) The body of Ann Palmer, the wife of the prisoner, who was a surgeon and general practitioner, had been lying fifteen months in the grave, under a professional burial-certificate of death from *bilious cholera*, when the sudden death of Cook and the

detection of antimony in his body, led to the exhumation of the body of this lady. It was then found that she had died from the effects of antimony, which was detected by Dr. Rees and myself in all parts of the body, even in the ovaries. When the history of the illness which preceded death was gone into, it was found that the symptoms were consistent with the effects of tartarized antimony, but not with those of bilious cholera or of any other disease. Antimony had not been prescribed for the deceased during her illness, and it was therefore clear that it must have been administered to her by some one up to within a short period of her death. With an actual life-interest in his wife's property to the extent of only 3,000*l.*, and within the short period of nine months of her death, *William Palmer* had made, or caused to be made, proposals for insuring her life in eight different Offices for an aggregate sum of 33,000*l.* Three of these proposals, made by *himself*—to the Norwich Union in December 1853, for 3,000*l.*; to the Scottish Equitable in January 1854, for 5,000*l.*; and to the Sun in February 1854, also for 5,000*l.*—were accepted by these Offices. He thus contrived in less than three months to effect a total insurance of 13,000*l.*, to cover a life-interest of 3,000*l.* on his wife's property! The other proposals, to the amount of about 20,000*l.*, were declined by the Offices to which he applied. The total premiums paid by *Palmer* on the three policies amounted to 338*l.*; and he was at the time so pressed for money, that he drew a bill which was actually discounted on the security of the policies, so that he, with criminal ingenuity, contrived to make the policies pay for themselves! As, at the time of effecting these insurances, he was in embarrassed circumstances, and unable to meet bills of this kind without becoming *still* more deeply involved in debt, the realization of the policies by the death of his wife became to him a matter of necessity. Within little more than six months after effecting the insurances on her life, the wife died from poison under his immediate superintendence. On her death these large sums were claimed by *Palmer*, and were paid to him by the Offices. Although there was at the time some suspicion that the wife had died from poison, there was no inquest or inspection, and the body was hastily buried. These facts only came to light, about a year after her death, during the investigation of another murder perpetrated by him in 1855. It seems that the general respectability of *Palmer*, his social and professional position, together with the two medical certificates of the cause of the death of the wife, checked any intention which might have existed on the part of the Offices to resist the payment of the policies. *William Palmer*, however, carried his life-insurance speculations much further than this. Having no pecuniary interest whatever in the life of his brother Walter Palmer, he either made or induced him to make proposals for the insurance of his life, in various Offices, to the amount of 82,000*l.* The Prince of Wales Office accepted the proposals to the extent of 13,000*l.*, under certain limitations. On the 16th August, 1855, Walter Palmer died suddenly, in the presence of his brother *William* and another man of doubtful character, with whom he had recently placed him as a lodger; and it was rendered highly probable, if not proved, that the prisoner *William* had, an hour or two before his death, purchased at a druggist's a bottle of prussic acid. The policy had been previously assigned by Walter to *William*, for a nominal consideration; but when *William Palmer* made application for the amount after the death of his brother, the Office refused payment; and, for very good reasons, *Palmer* failed to enforce it. At the inquest held on the body of the brother at Rugeley in 1855-6, it was proved that *Palmer* had directed the man with whom he had placed his brother after the insurance on his life, to give him as much brandy as he would take, and to keep a quantity of this spirit by his bedside. The brother was a drunkard, but this mode of destroying life was too slow for his purpose. When the necessity for money increased, he reverted to the potent poison above mentioned, and suggested that death had

been caused by apoplexy. *Palmer* subsequently tried, but ineffectually, to insure, to the extent of 25,000*l.*, the life of his groom, George Bates, described by him in his proposal as 'a gentleman' of independent means; and he advised a man named Cheshire, the Postmaster of Rugeley, also to make proposals on his life to the extent of 5,000*l.* and assign the policies to him. But for the revelation of facts connected with the death of Cook, these two persons, on whose heads a heavy life-insurance value had thus been set, would have been the next victims. Thuggism, as formerly perpetrated in India, by a certain class of Hindoos, might be regarded as a venial offence compared with this professional mode of raising large sums of money upon human life!

It is now the custom of Offices to require a statement whether the life has been already proposed to other Offices, and whether the proposal has or has not been accepted, and to what amount. But this is only a partial method of checking such nefarious speculations. In France and most Continental States insurances of this kind are said to be strictly forbidden, not for the prevention of gambling (which is rather encouraged), but in order to guard society against the risk of the persons who insure, contriving the death of the insured. That these regulations are not sufficient to guard against secret murder and speculation in human life is, however, clearly established by the case of *Dr. De la Pommerais*, who in May 1864 was convicted in Paris of the murder of a woman named Pauw. In another part of this work (vol. 1, p. 438) the reader will find an account of the medical circumstances connected with this act of murder, which equals, if it does not surpass, in atrocity, the murders perpetrated by William Palmer on his wife and brother.

De la Pommerais had first cohabited with the deceased. Having thrown her off, he married, in August 1861, a lady of some fortune, Madlle. Dubizy. Some time after the marriage, the mother of this lady died under very suspicious circumstances, as it was supposed, from poison administered by the prisoner. In June 1863 he suddenly, and without any apparent cause, renewed his intimacy with the deceased Pauw, who was living in great poverty with several of her children. Having advanced to her small sums of money, amounting on the whole to about 27*l.*, he induced her to insure her life in various Insurance Offices for the sum of 22,000*l.*, and afterwards to assign the policies to him. The reasons which he gave for effecting these insurances were—partly that he had advanced to the deceased large sums of money (4,000*l.*), and partly that, in the event of her death, he wished to provide for his illegitimate children. The first statement was proved to be untrue, and the second was inconsistent with the claims which he subsequently made on the Offices. The woman was examined, found to be in good health, and insurances on her life were effected for two or three years to the large amount above stated. La Pommerais paid the first premiums, amounting to 600*l.* He had thus entered into engagements for three years to pay in premiums a sum of about 800*l.* per annum, when his practice did not bring in more than 400*l.* per annum, and he had no other resources! He induced the deceased to feign that she was ill and had met with an accident; but the surgeons and physicians whom she consulted found, on examination, that there was nothing the matter with her, with the exception of a few attacks of vomiting. She continued well up to the 16th of November, when the prisoner visited her and passed the evening with her. She was taken very ill that night, and after violent vomiting and convulsions, with fainting, she died on the morning of the 17th, as it was proved, from the effects of digitaline, a large quantity of which the prisoner had purchased some time before, and of the disposal of which he could give no satisfactory account. He found no difficulty, however, in procuring a medical certificate to the effect that deceased had died from *gastritis* and perforation of the stomach. The policies of insurance had been assigned to him by the deceased shortly before her death, and it was the early

claim which he put in for the payment of them that first led to suspicion. There was no answer to the charge of murder by the administration of digitaline, and the prisoner was convicted and executed.

The proper method to stop this secret system of murder would be by placing severe legal restrictions on the sale or assignment of policies, and by preventing the purchase of them by strangers, who can only have an interest in the death of the insured at the earliest possible period. Further, no person insuring the life of another should be permitted to claim after death a larger sum than would represent his lawful recoverable interest in the life of the insured. The burial-club murders are said to have been much checked by a regulation of this kind, which prohibited a person from recovering under this species of insurance, more than the amount proved to have been actually paid for the funeral. It would be well if this principle were universally carried out, but from the evidence given at the trial of Mary Ann Cotton (*Reg.* v. *Cotton*, Durham Lent Assizes, 1873), there is reason to believe that insurances on lives are still secretly effected simply for the purposes of murder. The prisoner was indicted for the murder by poison of her stepson, who died in July 1872. The body of the deceased was exhumed, and arsenic was detected in it. This was proved to be the sole cause of death. This woman, it was stated upon well-ascertained facts, had at different times killed by poison her mother, fifteen children, three husbands, and a lodger—making altogether twenty persons in a few years: and the lives of most, if not all, of them were insured! In some of these cases she had claimed and received from the Insurance Offices, the premiums on these deaths. One of her three husbands thus disposed of, and four of her children were insured in the British and Prudential Insurance Office. They died rather rapidly one after the other, and the medical man assigned *gastric fever* as the cause of death, when the symptoms were not consistent with this disease. The prisoner obtained from the Office a sum of thirty-five pounds by the death of this husband, and some smaller amounts from burial clubs by the death of the children! She then married a man with a family of children, and was very anxious to have his life and the lives of his children insured. One day he found her at an Office trying to procure an insurance on his life. He then refused to live with her, and his life was thereby saved. This woman was very properly convicted and executed. No toxicomania was pleaded in defence. It is clear from the evidence in this and other cases, that some of the Insurance Offices which find clients among the poor, furnish great facilities for such murders, and that the managers are not sufficiently careful in making inquiry into the means, motives, and objects which induce persons in this class of life to effect insurances on the lives of others.

The trial and conviction of this criminal for these insurance murders brought to light another fact, namely, the great insecurity of life in this country owing to the perfunctory manner in which some medical men discharge an important duty in filling up certificates of the causes of death. (See Vol. i. p. 12.) With fully-marked symptoms of arsenical poisoning, these sudden and violent deaths were registered, one after the other, as *gastric fever!* A public writer, commenting on these cases, justly observes: 'Are the symptoms of arsenical poisoning so subtle that trained doctors cannot be expected to notice them? Is it creditable to medical science that a man should be allowed to die with a fatal quantity of arsenic in his stomach without foul play being suspected? But perhaps the greatest wonder is that a woman could successfully practise for so many years a system of poisoning without betraying her dreadful secret or awakening, more than once, material distrust among her neighbours.' The success of this criminal depended, first, on the facilities for insuring the lives of others in a low class of Insurance Offices, and, secondly, on the carelessness with which causes of death are certified.

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